

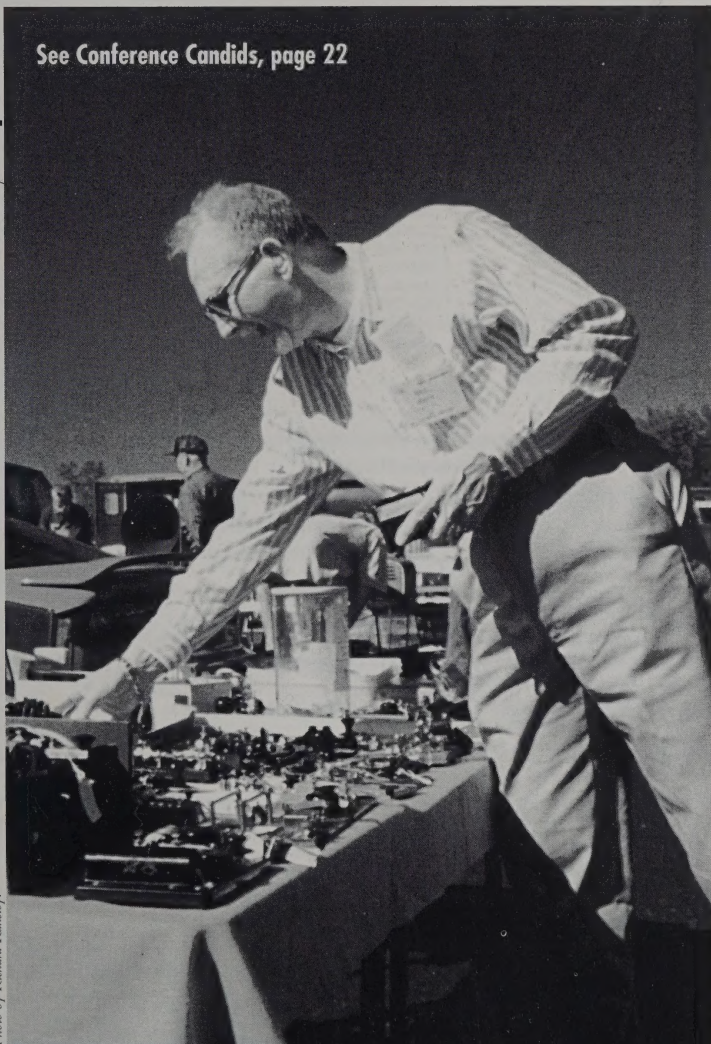
# THE OTB

THE OLD TIMER'S BULLETIN NOVEMBER 2001 VOL. 42 / #4

OFFICIAL JOURNAL OF  
THE ANTIQUE WIRELESS  
ASSOCIATION, INC.

*Published for the collector,  
historian and old-time  
radio operator*

See Conference Candids, page 22

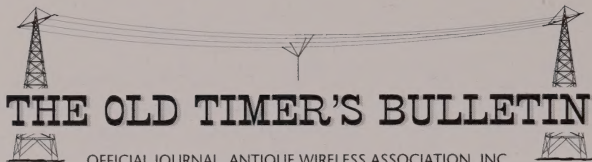


*Photo by Richard Ransley*



## CONFERENCE 2001 RETROSPECTIVE ISSUE

Time-sensitive proxy materials enclosed.  
Please review at once!



# THE OLD TIMER'S BULLETIN

OFFICIAL JOURNAL, ANTIQUE WIRELESS ASSOCIATION, INC.  
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Ludwell A. Sibley

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*The Old Timer's Bulletin* is published approximately four times a year by and for members of the Antique Wireless Association, Inc. AWA is a nonprofit historical society founded in 1952 and chartered by the State of New York. *The Old Timer's Bulletin* is available through AWA membership. Its issuance is subject to change from time to time as to frequency, content, and size. It is not liable in any way for any buying-and-selling transaction entered into as a result of its content.

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# CONTENTS

## FEATURE ARTICLES

- 32 On The Air From The USS Albacore's Radio Room .....Alex Mendelsohn, AI2Q  
*Rehabbing the communications gear of a 1950s high-tech sub.*
- 36 Glimpses of the Muchow Auction Scene .....Courtesy HVRA  
*We can't do justice to a million-dollar auction, but here are a few shots!*
- 40 The Marconi Wireless Installation in the R.M.S. Titanic .....Parks Stephenson  
*Dispelling myths and re-opening questions about this ill-fated radio equipment.*
- 47 A Structured Approach to Fixing Up Those Nice Old Radios .....Bill Fizette, W2DGB  
*7 - Repairing a 1951 Personal Portable.*

## 2001 CONFERENCE RETROSPECTIVE

- 15 The 2001 Annual Conference: One Man's Impressions .....Larry Babcock
- 19 Annual Conference Awards Report .....Staff
- 23 Annual Conference Candids .....Dick Ransley
- 24 Annual Conference Auction Report .....Staff

## COLUMNS

- 12 Equipment Restoration .....Ken Owens  
*Testing a 1L6 Substitute; Cleaning Variable caps and Voice Coils; Sparton 96 Restoration*
- 14 Radio Reproducers .....Dave Crocker  
*The Bosch Dragon*
- 27 New Books and Literature .....David W. Kraeuter
- 38 The Communications Receiver .....William Fizette, W2DGB  
*Fire and Flood....Fact or Fiction?*
- 43 Key and Telegraph .....John Casale, W2NI  
*The Telegraph Instrument Factory of John Dean Caton*
- 48 Breadboarding .....Richard A. Parks  
*Super-Regenerative Detectors*
- 51 Television .....Richard Brewster  
*Restoring Later Pre-WWII Television Receivers*
- 53 On the Internet .....Chuck Schwark  
*Telephone & Telegraph On The Web*
- 54 Below 535 .....Frank J. Lotito, K3DZ
- 56 The Vacuum Tube .....Ludwell A. Sibley  
*Tube History in The AWA Review  
Understanding Obsolete Units of Measure*
- 59 Amateur Radio .....John F. Rollins, W1FPZ  
*Upcoming Events*
- 60 Recent Radio, TV and Entertainment Obituaries .....Charles S. Griffen, W1GYR

## DEPARTMENTS/CLUB NEWS

- |                         |                           |  |
|-------------------------|---------------------------|--|
| 4 From the Editor       | 7 About Our Authors       | 65 Business Card Ads                   |
| 5 President's Message   | 58 Silent Keys            | 66 Classified Ads                      |
| 5 Letters to the Editor | 63 From the Museum Store  | 71 OTB Back Issue Ordering Information |
| 8 AWA News              | 63 OTB on CD Announcement | 72 The Museum — Back Cover             |

# FROM THE EDITOR

## Bart Lee at Ground Zero

**A**WA Member Bart Lee, KV6LEE, is well known to AWA Conference participants for his engrossing SWL seminars. Just a few days after the conference, while in New York City conducting business for his San Francisco law firm, he found himself eyewitness to the horror at ground zero. From a vantage point in a friend's high-rise apartment at 5th Avenue and Washington Park, he actually saw the third building go down. Immediately canceling his legal business, Bart contacted the Red Cross, Salvation Army, and New York Office of Emergency Services to see how he might be helpful.

His radio expertise was welcomed, since such cell and wired phone circuits as had survived were hopelessly overloaded and virtually useless. As KV6LEE, he served for more than a week of 18-hour days as night-shift trick chief for the NYC Red Cross radio operation, which was run as a subnet of RACES (Radio Amateur Civil Emergency Service). At times Bart handled the RACES net itself. Working with New York City emergency agencies at three sites, around the clock, the Red Cross/amateur radio operation relayed emergency evacuation orders and, later, managed about a dozen shelters.

At a time when cell phones and palm pilots are in the hands of the general public everywhere, some may have wondered if amateur radio emergency communications services are as important now as they may have been a decade or more ago. But the events of September 11th have certainly reaffirmed the value of a trained cadre of ham operators who know how to set up emergency radio equipment and how to manage and coordinate effective radio communications.

## Muchow Auction

The Ralph Muchow Estate Auction was an event anticipated with great excitement by hard core collectors from all over the world. They descended on the Hemmens Convention center in Elgin, IL during August 3-5 with money in their pockets and determination to acquire the artifacts of their dreams. This was certainly a once-in-a-lifetime sale of rare, top-quality material. According to *Antique Radio Classified* magazine, designated as official reporter for the event by auctioneer Richard Estes, 1,733 items crossed the block during the event and a total of \$1,034,416 changed hands.

Although The Houston Vintage Radio Asso-

ciation has graciously made available to *The OTB* hundreds of electronic images from the auction, most of the space this issue is necessarily taken up with our own major event, the 2001 Rochester Conference. To save room, I've included these few Muchow comments in my editorial space. See page 36 to view a small selection of the HVRA images. For complete auction coverage, including auction prices, see the October 2001 issue of *Antique Radio Classified*.

To view the complete set of HVRA images, visit <http://freeweb.pdq.net/wck/muchow/muchow.html>.

The impact of the Muchow auction was certainly obvious at ARCI Radiofest XX, which was deliberately held just ahead of the Muchow auction to give participants a chance to attend both functions. ARCI also omitted its own auction this year so as not to conflict with the Muchow event. As a result, the ARCI meet seemed not to be quite itself, with crowds a little smaller and a large section of the parking lot, normally filled with vendor booths, given over to parking for some trailer trucks seemingly not associated with the show.

As for the Rochester meet, I wasn't able to make it on opening day (Wednesday), when the flea market would have been at its peak, but I'm informed that the paved spaces were pretty much sold out. However, the number of closed or absent booths was higher than usual on the second day and a lot of bare tarmac began to appear. Certain serious collectors I'd seen at the conference for years were not evident. One imagines that these folks must have saved up their cash and vacation days to attend the Muchow event.

Our event was also thrown a bit of a curve when the Marriott, right in the midst of our pre-registration period, suddenly became a dormitory and conference center for Rochester Institute of Technology! Certain people with confirmed reservations were bumped, though they were offered good discounts and transportation arrangements to relocate to a nearby Marriott sister hotel.

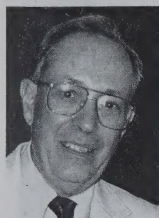
In spite of all of this, I saw a lot of happy people at the conference. There were many good buys to be had and interesting meetings to attend, and most dealers said they sold out of their "good stuff" just a few hours into the first day. Our Awards Banquet was as crowded and upbeat as ever, and we're certainly all looking forward to an even bigger and more exciting conference next year—wherever it might be located!



# THE PRESIDENT'S MESSAGE

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The terrible and tragic events of September 11, which destroyed so many thousands of lives, have forever changed our casual and trusting American life style. Those persons who



caused these unconscionable acts under the banner of misplaced religious fanaticism will surely pay the price eventually. But in the meantime we, Americans as well as all the other peoples affected by this day, will pull together to mourn and bury our dead. And then we will regroup, as we have always done, and get on with our lives. We offer the deepest sympathy from every member of the Antique Wireless Association to all those, here and abroad, who lost family members and relatives in this terrible catastrophe.

Our organization is one of peace and scholarship — we research and preserve of the history of the remarkable phenomena of radio and wireless communication. Our members, under this common umbrella, pursue a wide range of activities ranging from serious scholarship to casual hobby. Since this organization was founded 49 years ago, we have, collectively and individually, made significant contributions to the body of knowledge. And the AWA will continue, since to stop our activities in the face of terrorism will be to acknowledge that our opponents have won. This will never happen.

In a more positive light, the 40th annual AWA Conference, to the accompaniment of perfect up-

state New York weather, came and went peacefully. The significant associated event, which occurred shortly before the meet, was the news that our headquarters hotel, the Marriott Thruway, had been taken over by the Rochester Institute of Technology as an inn and conference center and as a dormitory for its students. At this writing the date and location of our 2002 Conference is still open, but there *will* be a Conference, and when the information is available you will be informed.

Two footnotes to the above: Our secretary reports receiving numerous messages of sympathy from overseas members, and our member Bart Lee of San Francisco, in New York on business on September 11, distinguished himself by becoming second in command at the amateur radio emergency communications center, which turned in yeoman service as a replacement for so many of the facilities which were knocked off line by the emergency (more about this in "From the Editor.")

## Special Notice—Dues Increase

Based on action by the Board of Directors at the September special meeting, a dues increase will be announced in the February, 2002 issue of *The OTB*. Dues for U.S. membership will become \$20.00 per year; foreign memberships (including Canada) will become \$25.00 U.S. per year. The two-year discount on U.S. subscriptions will no longer be offered. Life memberships will increase to \$400.00 (U.S.) and \$500.00 (elsewhere). If you wish to take advantage of the present rates, now would be a good time!

---

## LETTERS TO THE EDITOR

*All letters to the Editor are read with interest and attention, though not all can be published in this column. Letters may be paraphrased, shortened or otherwise edited to fit the available space. The statements made by our correspondents are their own opinions and do not necessarily reflect the views of either the OTB staff or the Antique Wireless Association.*

### NOTE OF SYMPATHY

I was shocked by the deadly terrorist attack to the USA last September 11. As an AWA member for many years, I would like very much to express my deep sympathy to all my good friends and fellow members for the many lives lost in this act of war.

CARLOS ALBERTO FAZANO

C.P. 25, Osasco, SP

Brasil

### NEEDS HELP WITH 1940 VTVM CIRCUIT

I put together the "Slide-Back Vacuum-Tube Voltmeter" as described in the 1940 *RCA Receiving Tube Manual*. I was able to verify all voltages indicated in the circuit diagram, and also to calibrate the unit using the 6E5 "Magic Eye" exactly as described. However, there is no meter indication on either the 0-25 volt or 0-250-volt scales when test voltages are connected to the

meter input. Can someone help me trouble-shoot this problem?

RAINER PFEUFFER

Ellingerweg 57

D-81673 Munich

GERMANY

rainer.pfeuffer@icn.siemens.de

## KUDOS AND COMMENTS

The August 2001 *OTB* was truly excellent! Thank you to all the authors who contributed! I have two comments to make, both intended to be positive!

1. I felt last year's discussions on grid leak detection were of terrific interest, as exemplified by the "many letters" received. I think to cut it off (as was done), especially before a valid consensus was reached, did not make sense. After all, this is exactly why we read *The OTB*, and despite all of our experience, there is obviously much misunderstanding of grid leak bias in the context of 5V DC filaments. I would say print all the letters and let the very interesting discussion/interaction continue!! We still don't have a correct answer!

2. The excellent series by Ken Owens raised a question in my mind regarding the explanation of the use of diodes instead of line resistors in the same issue. A diode will reduce the heating power of two resistors in series (the still necessary line resistor, and the filaments) by 50 percent, not due to 0.707 factors, etc., but due to its 50 percent duty cycle (PWM). To get the same long-term average filament heating value ( $I^2R$ ), the current in the 50 percent duty cycle has to produce twice as much "pulse" heat for one-half the time on, and so the current is then 1.4 (or  $\sqrt{2}$ ) times the starting value. However, this current also flows in the dropping resistor, so it dissipates the same long-term average heat there as it did before—just as in the filament. It seems to me the reduction in dissipation in the resistor with a diode is therefore zero, for proper RMS values of filament heat. The reduction in resistor ohmic value is accompanied by a 1.4 times current increase, negating any dissipation decrease.

JOHN K. GRADY, P.E.

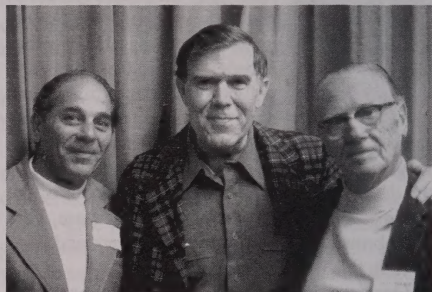
Ayer, MA

*It's the rare editorial decision that satisfies everyone, and am sorry you felt that the grid leak discussion was cut off too abruptly. The letters on this subject were getting longer and longer, rivalling full-fledged articles, and were beginning to use up a great deal of space in what is, after all, a publication of limited size and frequency. Since these contributions were coming*

*from just a few people, I felt that it would be better if you discussed the issues among yourselves and then submitted a formal article summarizing your conclusions. I'd still invite you to do so!—mfe*

## AWA STALWARTS

Recognize these stalwart AWA-ers? They are no longer with us, but their legacies live on. From left: Paul Giganti (San Carlos, CA), Bruce Kelley (Bloomfield, NY), Dave Brodie (Menlo



Park, CA). I took this picture in May, 1979, when Bruce, our long-time museum Curator, was visiting Paul and Dave in California.

GEORGE DURFEY

Portola Valley, CA

## CROSLEY MANSION

Arthur Kunst (DuBois, PA) sends a clipping from the *St Petersburg Times*, describing the restoration work on the lavish, Mediterranean-style, home of Gewndolyn and Powel Crosley, Jr in Sarasota, FL. Occupied by the couple from 1930 to 1939, it was eventually abandoned and fell into decay. Now owned by Manatee County, it has been restored in a historically accurate manner and contains some Crosley artifacts. Consider a visit when you are in the area. Proceeds benefit the Boys & Girls Clubs of Sarasota and Manatee Counties and the Ringling School of Art and Design.

## COVER CANDIDATE

I found this picture among my reference books and it was so cute I wonder if it would make a nice cover photo. If you agree and need the original, I will be glad to send it along.

LEONARD AQUILINO, JR.

Cicero, NY

*It really is a cute picture and since I happen to have a good copy of it myself, I'm reproduc-*



ing it here. It's from the cover of "Thordarson Radio Service Guide No. 342-C," copyright 1938, and bears the caption "Repairing Carefully Done by Experienced Servicemen." But I don't think it will become an OTB cover because I try hard to have the cover for each issue relate somehow to the content inside.—mfe



## "OOPS" DEPARTMENT

I noticed an error in the article "A 1929 Amateur Radio Station for the New Millennium" (August, 2001 issue). In describing how to make the tuning capacitor more fully meshed at a given frequency (p. 41, bottom of right hand column), the author suggests adding inductance to the tank coil. He should have suggested *reducing* the inductance.

VERNON L. CHAPPELL  
San Diego, CA

*Author Eddy Swynar thanks this sharp-eyed reader for catching his "slip of the pen."*

## About Our Feature Article Authors

### LARRY BABCOCK

*The 2001 Conference: One Man's Impressions*

Larry Babcock grew up in his dad's radio sales and service business, acting as a service tech and installing auto receivers while still in high school. After serving in the Infantry during World War II, he earned a BSEE degree at the University of Iowa and began a 37-year career at Bell Aircraft.

At Bell, Larry headed programs to develop radar and air-to-air microwave relay links for the RACAL missile system and, later, to evaluate the Army's military electromagnetic interference problems. During his last years at Bell, Larry was in charge of the design of electromagnetic compatibility (EMC), TEMPEST, ordinance safety, radiation hazards and lightning immunity for all military equipment produced by the company. Later, he worked in these same fields as a consultant for other companies.

Larry began collecting antique radios in about 1973. He specializes in Federal, Wurlitzer, and WW I aircraft sets, and has written a book on the history of Federal radio. He is on the AWA Board of directors and serves as a guide at the AWA Museum in Bloomfield.



### WILLIAM B. FIZETTE, W2DGB

*A Structured Approach to Fixing Up Those Nice Old Radios*

Bill is AWA's current president as well as Editor of *The OTB's* "The Communications Receiver" Column. His bio appears in the February, 2000 issue.

### ALEX MENDELSON, AI2Q

*On The Air From The USS Albacore's Radio Room*

Alex Mendelsohn has been an AWA member for 25 years, and is an avid ham radio operator (first licensed as WV2IKT in 1959) and antique radio collector. He is also a Certified Electronics Technician and holds a General Class FCC commercial ticket, issued as a First Class Radiotelephone license. Alex served in the US Army Signal Corps, where he was a radio communications specialist. Today he works as a technical journalist.



### PARKS E. STEPHENSON

*The Marconi Wireless Installation in the R.M.S. Titanic*

Parks is a Principal Systems Engineer at Raytheon Naval & Maritime Integrated Systems in San Diego, California. A graduate of the U.S. Naval Academy and retired naval officer, Mr. Stephenson has spent a career at sea, much of it dealing with marine communications and data links.

An avid tube-radio collector and Titanic amateur historian in his spare time, it seemed only natural for him to take on the task of researching the Marconi installation aboard the Olympic-class liners. Mr. Stephenson briefed James Cameron on the layout and equipment of the Marconi rooms prior to the film director's departure to film the documentary, "Ghosts of the Abyss," at the Titanic wreck site.



**OTB POLICY ON PROMOTING EVENTS:** The OTB is pleased to list the meets and meetings of any established antique radio organization, whether or not it is associated with the AWA. Do not send your information directly to the OTB Editor. Please send it to Joyce Peckham, Box E, Breesport, NY 14816. Closing date is six weeks prior to first day of month of issue.

## Calendar of AWA Activities

**October 27**  
CC-AWA Mini-Meet

**November 9-11**  
VRPS/AWA  
Convention '01

**November 11**  
AWA, Inc. Membership  
Meeting followed by  
Semi-Annual Board  
Meeting

**November 11**  
AWA Museum Member-  
ship Meeting followed  
by Board Meeting

**December 1**  
AWA Florida Meet

**March 21-23**  
CC-AWA "Spring Meet  
in the Carolinas"

## Calendar of Meets

(AWA logo identifies AWA-sponsored events)

### NVRC RADIO OCTOBERFEST

October 6

The annual Fall Antique Radio Mega Meet and Auction begins at 7 a.m. at The Associated Builders and Contractors Building (inside), 1604 Elm Hill Pike, Nashville, TN. Info: Larry Chambers 615-833-2448.

### CC-AWA "MINI-MEET

October 27

At City Lake Park, Jamestown, NC. from 8 a.m.-12 noon. Free admission; there may be a small fee for vendors. For more info: contact Ron Lawrence, 704-389-1166, POB 3015, Matthews, NC 28106, or visit cc-awa.org.

### VRPS/AWA CONVENTION '01

November 9-11

At the Hampton Inn and Suites, Mesquite, TX, just east of Dallas on I-635. Old equipment contest, technical sessions, four auctions, inside flea market, awards banquet. Theme: centenary of Marconi's first transmission across the Atlantic. Each contest first-place winner will receive one of the new Marconi commemorative 2-pound coins being issued by the British Royal Mint. For more info and registration packet contact Ron Daniel, 1416 Lamplighter Lane, Fort Worth, TX, 76134,

817-293-6257. Or visit <http://www.radioremembered.org>, or e-mail to [radioguy@texas.net](mailto:radioguy@texas.net).

### AWA, INC MEMBERSHIP AND BOARD MEETING

November 11

At Rochester Institute of Technology Conf. Ctr. (formerly Thruway Marriott). I-90 Exit 46 to I-390 North to NY 253 West to NY 15 South. Membership meeting at **11 a.m.** (changed from 1 p.m.). All members welcome; Semiannual Board Meeting follows.

### AWA MUSEUM MEMBERSHIP AND BOARD MEETING

November 11

Same location as above. Membership meeting at 2:30 p.m. but will be delayed, if necessary, until conclusion of AWA, Inc. Board Meeting. Open to any interested member; followed by board meeting.

### AWA FLORIDA MEET

(Moved to Sarasota from Bradenton)

December 1

8:00 a.m. to noon at The Lions Club, 120 S. Tuttle Ave., Sarasota, FL. For info, contact Chip Taylor at [chip100@gte.net](mailto:chip100@gte.net) or call Jack Warren at 941-349-4875.

### SPRING MEET IN THE CAROLINAS

March 21-23, 2002

Sponsored by AWA Carolinas At Sheraton Charlotte Airport Hotel, Charlotte, NC. For more info: contact Ron Lawrence, 704-389-1166, POB 3015, Matthews, NC 28106, or visit cc-awa.org.

## Recurring Meetings & Events

• **Antique Radio Collectors of Ohio**—meets first Tuesday of each month at 2929 Hazelwood Ave., Dayton, OH (4 blocks east of Shroyer Rd. off Dorothy Lane) at 7 p.m. Also annual swap meet and show. Membership: \$10.00 per year. For more info, contact Karl Koogle: mail to



above address; phone (937) 294-8960; e-mail karlkrad@gemair.com.

• **California Historical Radio Society**—For info on current meetings, call the CHRS hotline: (415) 821-9800.

• **CARS, the Cincinnati Antique Radio Society**—Meets on the third Wednesday of each month at ITT Technical Institute, 4750 Wesley Ave., Norwood (Cincinnati) Ohio. For more information contact Greg Tierney, (513) 732-1844, or Bob Sands, (513) 858-1755.

• **Carolinas Chapter of the AWA**—Hosts four “mini-swap-meets” each year (in January, May, July and October) plus an annual conference, “Spring Meet in the Carolinas,” on the 4th weekend in March. Executive committee meets approximately quarterly. For more info, visit the

web site at CC-AWA.ORG or contact R.C. Lawrence, KC4YOY, Chapter President, P.O. Box 3015, Matthews, NC 28106-3015; phone (704) 289-1166; e-mail kc4yoy@trellis.net

• **Central Ohio Antique Radio Assn.**—Meets at 7:30 p.m., third Wednesday of each month at Devry Institute of Technology, 1350 Alum Creek Rd., Columbus. (1-70 Exit 103B). Contact: Barry Gould (614) 777-8534.

• **Delaware Valley Historic Radio Club**—Meeting and auction begins 7:30 p.m. on the second Tuesday of each month. Location: Telford Community Center on Hamlin Ave. in Telford, PA. Annual dues: \$15.00, which includes a subscription to the club’s monthly newsletter *The Oscillator*. For more info contact Bill Overbeck at (610) 789-8199 or Dave Snellman at (215)

## JAMES MILLEN 100TH ANNIVERSARY EVENT

*The following was adapted from a notice on the James Millen Society Web site and from a public message placed by Don Buska, N900, President of The James Millen Society, on various special-interest mail reflectors.—mfe*

On September 5th and 8th, during our 2001 Annual Conference, the James Millen Society celebrated the 100th anniversary of Millen’s birth by operating the original Millen 1930s amateur radio station, W1HRX, and other Millen equipment, located at the AWA Museum Annex. AM and CW contacts were made on the 20- and 40-meter bands.

On the evening of September 5th, the 1930s transmitter was operated as part of the Collins Collector Organization’s “AM Night.” The organization opened 3880 kHz to W1HRX for a good portion of this monthly event. Mike and Bob Raide, W2ZE and W2ZM, our father and son “heavy transmitter team,” helped fire up the old rig and carry out early on-the-air checks.

The operation was originally scheduled for 7-9 p.m. EST (coinciding with the tours of the Museum and Annex being run for conference visitors). However, W1HRX went on the air earlier, at 4 p.m. on 3835 kHz, to provide contacts to hams at the conference site about 30 miles away, an activity master-minded by Tim W1GIG. Contacts were still being made after tour hours and, thanks to Museum Curator Ed Gable, who kept the Annex open so



*Conference visitors filled the Annex during the 7-9 p.m. tour hours as the Millen rig was being operated. The equipment is at left, directly in front of the seated operator. Photo from the James Millen Society Web site.*

that the group could continue to operate, the event continued until 11 p.m. “I wouldn’t have missed it for the world,” said Ed.

The looks on the faces of the visiting AWA members observing the station operation were really something to see! Many later said that the activity was one of the highlights of the conference. On Saturday September 8th, during daytime hours, contacts were made using a Millen 90801 transmitter/90381 modulator/90711 VFO. A total of 158 contacts was made during the Millen event.

QSLs and reception reports from all who worked or heard the station should be sent to The James Millen Society, 4805 64th Ave., Kenosha, WI 53144. QSLs for the event are now being printed, but will be not be available for approximately eight weeks.

## CALL FOR PAPERS FOR AWA REVIEW VOLUME 15

Papers are now being accepted for possible inclusion in Volume 15 of *The AWA Review* to be published in 2002. Papers on any topic related to the history of wireless and radio will be considered. In an attempt to link the *Review* articles to the annual conference topics, we are particularly interested in papers relating to the main topic of this year's conference, Stromberg-Carlson, and to the various programs and papers to be presented.

Please refer to previous issues of the *Review* for general formatting requirements and please send all submissions via email to the editor: Tom Perera (tomperera@w1tp.com). Microsoft Word format is preferred. The deadline for submission of completed manuscripts is March 1, 2002.

345-4248. Club mailing address: P.O. Box 847, Havertown, PA 19053.

• **The Downer's Grove (IL) Park District Museum** sponsors a monthly "Collector's Hour." Participants have the opportunity to display collections at the facility for several weeks before making their individual presentations. The event is open to the public with no admission charge. The museum has also begun to sponsor a yearly "Collector's Fair." For more info, contact Mark Harmon, The Downer's Grove Park District Museum, 831 Maple Ave., Downer's Grove, IL, 630-963-1309, fax 630-963-0496, mharmon@xnet.com.

• **Houston Vintage Radio Association**—Meets second Tuesday each month (except Jan. and

Dec.) at Lai Lai Restaurant, Tides II Motel, Houston Medical Center, Main and Holcombe Sts., Houston, TX. Meetings include auction/program, 7-10 p.m. Assoc. publishes *Grid Leak* quarterly, monthly activity announcements. Membership \$15/yr. Write: HVRA, P.O. Box 31276, Houston, TX 77231-1276, or call Richard Collins, (713) 778-0721.

• **Hudson Valley Antique Radio and Phono Society**—Meets third Thursday of month, 7 p.m. Meeting, swap meet, and membership info: Peter DeAngelo, President, HARPS, 25 Co. Rt. 51, Campbell Hall, NY 10916. (914) 496-5130.

• **London Vintage Radio Club**—This Ontario, Canada club meets in London on the last Saturday of January, March, May, June and November. Annual flea market held in Guelph, Ontario in September in conjunction with the Toronto club. Contact: Lloyd Swackhammer, VE3IIA, RR#2, Alma, Ontario, Canada. (519) 638-2827.

• **Mid-Atlantic Radio Club**—Meets monthly, usually the third Sunday of the month at the New Hope Seventh Day Adventist Church, Burtonsville, MD. Contacts: President, Ed Lyon, 11301 Woodland Way, Myersville, MD 21773-9133, (301) 293-1773, e-mail lyon@fred.net or Membership Chair, Paul Farmer, (703) 960-0650, e-mail: oldradiotime@hotmail.com. Website [www.maarc.org](http://www.maarc.org)

• **New Jersey Antique Radio Club**—Meets second Friday each month, 7:30 p.m. Holds three annual swap meets. Contact (send SASE) Phil Vourtsis, 13 Cornell Pl., Manalapan, NJ 07726, (732) 446-2427.

• **Northwest Vintage Radio Society**—Meets second Saturday of each month (except July and August), at or about 10 a.m., at Abemathy Grange Hall, 15745 S. Harley Ave., Oregon City, OR. Members display radios, exchange information. Guests welcome at all meetings and functions, except board meetings. For info, write the Society at P.O. Box 82379, Portland, Oregon 97282-0379.

• **Oklahoma Vintage Radio Collectors**—Meets second Saturday each month, Hometown Buffet, 1012 S.W. 74th St., Oklahoma City, OK. Visitors welcome. Dinner/socializing, 6 p.m.; meeting at 7 p.m. Membership, \$12/yr., includes monthly *Broadcast News*. Info: SASE to OKVRC, P.O. Box 50625, Midwest City, OK 73140-5625; or call (405) 755-4139 or (405) 732-6070; or e-mail [fkarnar@mmcable.com](mailto:fkarnar@mmcable.com).

• **Ottawa Vintage Radio Club**—Meets monthly (except June and July) in Conference Room, *Ottawa Citizen*, 1101 Baxter Rd., Ottawa, Ontario. Contact: Tom Devey, 601-810 Edgeworth Ave., Ottawa, ON K2B 5L5, (613) 828-5152. Mem-

## WITH THE CHAPTERS

We don't have a report from the Carolinas chapter this time, but there is some late-breaking news about another AWA chapter in the process of being organized, this one in Sarasota, Florida. The Sarasota group has taken over the Bradenton, Florida December meet (see Calendar of Events) and is working with AWA to obtain full-fledged chapter status. For more information, contact Chip Taylor (chip100@gte.net) or Jack Warren (941-349-4875).



## AWA LIFE MEMBERSHIPS ARE NOW AVAILABLE



Cost: \$300, overseas \$360 U.S.

Send your check to AWA

Secretary Joyce Peckham, Box E, Breesport,  
NY 14816. Phone (607) 739-5443.

e-mail: awapeckham@aol.com.

bership: \$10 Canadian/yr.

• **Pittsburgh Antique Radio Society** welcomes visitors to our Saturday flea market/contests in March, June, September, and December. An auction is included in September, and our annual luncheon/program is held the first Saturday in December. Our newsletter, *The Pittsburgh Oscillator*, is published quarterly. website: [www.nb.net/~schaefer/pars.html](http://www.nb.net/~schaefer/pars.html) For directions, specific dates, information call President Bonnie Novak at 412-481-1563 or write to Karl Lau-

rin, 8111 Sally, White Oak, PA 15131.

• **Society for Preservation of Antique Radio Knowledge**—Meets at 7:30 p.m. the second and fourth Tuesdays of each month in the party room at Cassano's Pizza Parlor, 1700 East Stroop Rd., Kettering, OH. Membership, \$18/year. Write SPARK Inc, P.O. Box 292111, Kettering, OH 45429; e-mail [sparkinc@juno.com](mailto:sparkinc@juno.com) or call John Pansing at (937) 299-9570.

• **Texas Antique Radio Club**—Meets alternate months in Kyle and Shertz, TZ. Contact: Ron Manning, President TARC, 133 East Huisache Ave., San Antonio, TX 78212. Phone (210) 734-6831; e-mail [ronmeg@gateway.net](mailto:ronmeg@gateway.net); website [www.gvtc.com/~edengel/TARC.htm](http://www.gvtc.com/~edengel/TARC.htm)

## Service Sources Available

The AWA Source Sheet is a listing of parts suppliers and services for the radio collector. Cost:

(continued on page 13)

## WHITE'S WAGGERY & TALES — THE FINAL SOLILOQUY

Many pleasant years were spent  
With hellos and goodbyes with peace intent;  
As collectors were searching with speed of  
light  
To find a treasure with tubes so bright.

We awoke from a deep dream sleep  
To find that morpheus had us in his keep.  
Scores of collectors would toss in their beds  
While visions of antiques cycle their heads.

Swift as a collector spots a prize  
Strong, vital, urges surface; spells buys.  
We were ready, even with champagne  
For sure we would win the bidding game.  
The startling news, a dorm for R.I.T.  
With no advance publicity.  
A phone call cross town, with voice most fran-  
tic  
Received by Bruce R. causing him near panic.

The sun had not risen, as yet,  
Flashlights galore, grass was still wet.  
Hopefully a collector will soon find,  
In the flea market a perfect treasure sublime.

At auctions, so many antiques on display,  
You wished for a bargain that very day;  
As you tendered your best bid  
With paltry pounds and pittance quid  
No pity or comfort to you gray heads

The bids are too high, a dozen said.  
Antique lost, it boggles the mind  
Maybe the next radio will be mine.

Try again, as new item is held high  
For all to see and bid to buy.  
Now mesmerized, the value of Catalin  
Use your charge card and you can win.

So through all comradeship, greetings, and  
cheers,  
Firm friendships made over fun-filled years,  
Will linger forever with you I have known,  
Even at Canandaigua, where first seed was  
sown.

I'll miss the Marriott, you can be sure  
Even the flea market sales pitch, with a hint of  
manure  
It is here! It is here! The day of computer  
Log in on E-Bay, and bid or surrender.

Before you take the gun down from the rack  
And blow everything up in your antique shack,  
Remember Bruce Kelly and keep the blood  
flowing  
When the going gets tough, the tough get  
going.

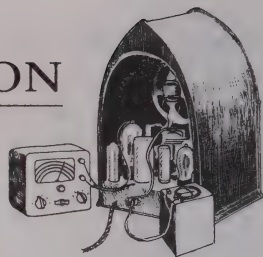
Edward J. White  
Chicopee MA

# EQUIPMENT RESTORATION

EDITED BY **KEN OWENS**, 478 SYCAMORE DR., CIRCLEVILLE, OH 43113

e-mail radio199@hotmail.com

PLEASE SEND CORRESPONDENCE DIRECTLY TO THE ABOVE ADDRESS,  
INCLUDING SASE FOR REPLY.



## Testing a 1L6 Substitute; Cleaning Variable Caps and Voice Coils; Sparton 96 Restoration

*Don't forget that answers to your questions are available at the E-mail address above.*

In the last column (Aug. 2001), I noted the receipt of a 1LA6 to 1L6 adapter from Jim Fred (Cutler, IN) and promised to test it. The results are substantially the same as John Kaetz (same column) found. The frequency shift on the 16 meter band is +0.7 MHz and +25 kHz at the high end of the BC band. The interelectrode capacitances of the 1LA6 plus the adapter are higher than the 1L6, causing the local oscillator to run at a lower frequency. This requires tuning higher on the dial to receive a given station. If you are already at the high end of the dial, the station may be unreachable.

Jim has an exclusive marketing arrangement with Olde Tyme Radio, 2445 Lyttonsville Rd., Silver Spring, MD 20910. Contact them if you are interested in one of these adapters. But when you use a substitute for the 1L6, the set must be realigned to preserve its calibration. This is a big job, and you might prefer to pay the price of a 1L6.



Alton DuBois (Queensbury, NY) shares the following tips: He removes the tuning capacitors from radios he is restoring and cleans them in an ultrasonic cleaner. These capacitors often have aluminum oxide "fuzz" on the plates and hardened grease on the bearings. He rinses the unit with clean water after cleaning and lets it dry thoroughly. A hair dryer will speed up the drying. Alton lubricates the bearings with Wahl electric clipper oil available from barber or cosmetic supply houses. This process does not affect the trimmer adjustments.

Here is a trick Alton uses to clean the voice coil gap on dirty speakers. He places the hose of a small vacuum cleaner directly on the voice coil and turns on the cleaner. The hose should be about the same diameter as the coil. The hose *must be in contact with the coil* when the vacuum is turned on, not held away from it, else the coil

and cone will be sucked upwards and damaged. This technique is very effective in removing dirt and magnetic grit from the gap.



Alton recently restored a Sparton Model 96 "Equasonne." He writes that this is an interesting set because the radio is a table model which sits on a matching console cabinet containing an 18" cone speaker. The set is unusual. It uses the Lester Jones "Technidyne" circuit which places all the tuning up front in a passive unit containing four coils and a four-section variable capacitor. This is followed by cascaded broad-band RF amplifiers using Sparton Type 485 tubes. The 485 is almost identical to the Type 27, but has a 3V heater. Sparton and AC Dayton used the Jones circuit to avoid the Alexanderson TRF patents.

His set is in three units: the passive tuner in a copper box, the RF amplifiers and detector in a steel box and the power supply and audio amplifier on a steel chassis. Working on this set out of the cabinet is difficult because the common connection between the units is made by mounting them on a metal plate on the floor of the cabinet. He connected the three cases together with a temporary jumper wire while they were on the work bench.


He found that the tuning section worked poorly because of dirt in the variable capacitors and had to remove them for cleaning. This was a real job. Opening the case requires removing 39 #6-32 screws. The dial and drive then must be removed to get at 6 1/4-20 screws holding the coil-capacitor assembly in the case. Each of the four coils is in a separate compartment. He cleaned the parts with the ultrasonic cleaner and re-assembled the unit. It still didn't work right, so he ended up going through this process three more times before it worked properly.

The bypass capacitors in the RF unit were shorted. He replaced them with modern units encapsulated in PVC tubing covered with black paper to look like the originals. The volume con-



trol was intermittent. When he opened it, he found that it consisted of a roller contacting a carbon-coated fiberboard resistance element. The carbon coating had worn off with use. The control has a special shaft and a screw-on knob, so he made a temporary repair by recoating the resistance element with a #4 pencil. It seems to work

smoothly for now.

The speaker driver needed cleaning and adjusting and now works well. The audio transformer was open and was replaced with a new one. Luckily the Type 50 output tube was good. He really got a shock when he priced a replacement—\$220 used! 

## **AWA NEWS**, continued from page 11

only a business-size self-addressed stamped envelope to AWA, Box E, Breesport, NY 14816.

### *AWA Slide/Video Program*

The Antique Wireless Association has available several historical documentaries to loan to affiliated organizations for club meetings and programs. There is no charge for this service other than return mailing cost. For info on loan conditions, to make reservations, or just inquire, contact Richard Ransley, P.O. Box 41, Sodus, NY 14551. The following are available:

#### **VHS VIDEO PROGRAMS**

V-2 — “Electrons on Parade.” 18 min. 1938 movie made at RCA’s Harrison Plant showing production lines with closeups showing receiving tubes, including a short sequence on transmitting tubes. (Very rare movie.)

V-4 — “The British Receiver.” Documentary of the AWA/BVPS meet with visit to Marconi’s Chelmsford plant, the British Science Museum, and ending with series of collectible British receivers. (VHS program transferred from slides.)

V-5 — “The Early Years.” Historical documentary narrated by Clarence Tuska telling of the early years of amateur radio, founding of the ARRL and WW I military radio training school. (VHS program transferred from slides.)

V-6 — “The Key.” History of the telegraph/radio key covering early hand keys, semi-automatics and commercial types. Script by Lou Moreau, W3WRE. (VHS program transferred from slides.)

V-9 — “The Transatlantic Tests and 1BCG.” Rare documentary/photographs showing early amateur operation leading to famous 1921 transatlantic tests.

V-12 — “Those Wonderful Magazine Covers.” The story of radio through magazine covers. Colorful with period music.

V-15 — “The WHAM Story.” Details development of a pioneer radio station in Rochester, NY. Program developed with assistance and recollections of Art Kelly, the station’s former gen-

eral manager.

V-16 — “The Charles Herrold Story.” Video prepared by Mike Adams who donated this copy to the AWA. It documents the work of broadcasting’s Forgotten Father who started broadcasting in 1912.

#### **SLIDE PROGRAMS**

S-1 — “Portrait of a Pioneer.” The life of Elmo Pickerill.

S-2 — “Polar Adventure.” Pictures taken by Bud Waite and his narration describing numerous trips to the Antarctic over a 35-year period.

S-3 — “70 Years of Vacuum Tubes.” Describes the history of vacuum tubes.

S-4 — “The Early Years.” (See description for V-5.)

S-7 — “The Transatlantic Tests and 1BCG.” (See description for V-9.)

S-8 — “Trip Through the AWA Museum” Covers exhibits and equipment.

S-12 — “The Key.” (See description for V-6.)

### **AWA NETS**

PHONE:

#### **SUNDAY:**

7244 kHz, SSB, noon (NCS:WA4IAM);  
3837 kHz, AM 4 p.m. (E.S.T.), 4:30 p.m. (during E.D.S.T.) (NCSs:W2ZM & W2AN)

#### **TUESDAY:**

14274 kHz, SSB, 2:30 p.m. (NCSs KC3YE and W0FXY)  
3837 kHz SSB, 8 p.m. (NCS WB2SYQ)

#### **MONDAY-WEDNESDAY-FRIDAY:**

3867 kHz, SSB, 9:30 a.m. (NCS: W2OBJ)

CW:

**DAILY**, 4 p.m., 3588 or 7050 kHz.

Protocol, informal. Check both frequencies for activity and join in, or call AWA de (your call) and see what you stir up.

First **WEDNESDAY** of each month, 8 p.m., 7050 kHz

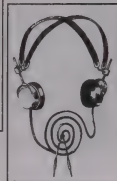
2-M REPEATER (Rochester Area)

**MONDAY**, 7:30 p.m. (NCS: K2GBR)

Receive 146.820 MHz  
Transmit 146.220 MHz

# RADIO REPRODUCERS

EDITED BY **DAVE CROCKER**, 35 SANTUIT POND RD., #4B, MASHPEE, MA 02649  
PLEASE INCLUDE SASE FOR REPLY.



## The Bosch Dragon

**T**he American Bosch Magneto Corporation was located in Springfield, Massachusetts with a background in early automotive accessories. Bosch entered the radio field in 1925 with its high-quality, but stoic-looking, 6-tube Amberola receiver.

Bosch marketed accompanying cone speakers for its radio line at a time when cone speakers were replacing horns as the reproducers of choice. Their Ambotones and Junior Ambotones were plain looking but reliable.


Then, out of nowhere, Bosch startled the radio world by producing a large cone speaker called the "Bosch Ambotone Reproducer." It was a dramatic looking speaker depicting a fiery, long-tailed, Chinese dragon encircling a dark blue, marbled field. The heavy, almost cardboard-like cone material was 18" in diameter with zig-zag stitching all around its edges. A ring of felt kept the paper cone from touching the outer metal support ring.

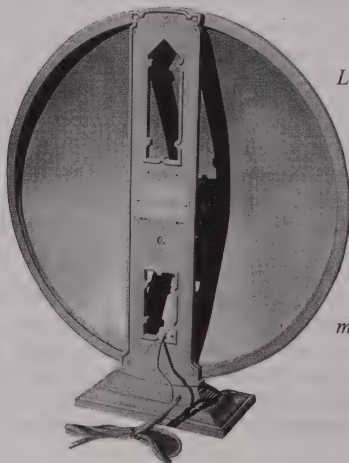
The massive 8" x 5" metal cast base held a single, flat metal support holding the magnetic reproducer and cone ring. A cut-out at the top of this support allowed the speaker to be hung on the wall, if so desired. The entire speaker stands 20" tall and demanded attention wherever it was placed.



*The brass identification tag attached to the rear main support states that the unit is "The Best In Radio."*

The "Dragon" was followed by another unique Bosch cone speaker, this one having a white wicker frame completely covering the paper cone. It, too, was outstanding. However, very few of these two versions of the Ambotone speakers exist, and are considered rare indeed.

Cone speakers would soon evolve from intricately painted paper fronts to being integrated into shapes such as sailing ships, lamps, globes and the like. Nevertheless, Bosch certainly made a fashion statement with its "Dragon" speaker. Catch one if you can. 



*Left: The Bosch Ambotone Reproducer displaying its startling Chinese dragon motif. Right: The rear view of the Ambotone speaker showing the main support and wall-hanging cut-out. The back of the paper cone is painted a medium blue color.*



*Photos by the author.*

# THE 2001 ANNUAL CONFERENCE: ONE MAN'S IMPRESSIONS

*By Larry Babcock*

**H**ow wonderful it was to be able to attend the AWA conference in Rochester, NY this year! I missed it last year because I had open heart surgery just a few days earlier. My twin brother, Ted, took my room at the Marriott, attended the conference in my place, and wrote this article last year. I have been unable to do much for over a year now and it made being there all the more exciting! My collection is more or less mature, I don't buy a lot at these events any more but I love talking with all the people.

The Marriott has changed hands! It was given to Rochester Institute of Technology shortly before our meet. In the process, a number of members had their confirmed reservations canceled and were booked elsewhere! Not good, but at least they were given passes to park at the Marriott (now R.I.T.) and didn't have to depend on the bus. Part of the facility was in use for student housing during the conference. I didn't see any problems caused by this except for the loss of rooms for AWA members. The location for next year's meet is under study and will be an-

nounced in *The OTB* as soon as it is decided.

Many members arrived Tuesday evening and some sellers even set up and displayed merchandise then. No one seemed to care about this and I found it very nice to be able to walk leisurely through the flea market and talk with people. I didn't buy anything then but some did. I hit the flea market the next morning at 5:30 am, a half-hour before the official opening. Others were there too, most equipped with the very necessary flashlight. These were used for about an hour until the sun took over about 6:30 am.

I made my first purchase at exactly 6:00 am. It was a Branston superhet kit. I like Branston because it was local-made in Buffalo, NY in the very early 20s. I had earlier placed an absentee bid on a Branston receiver (chassis only) at the Muchow auction. I thought I had bid plenty high (\$300), but didn't win. This one, with the cabinet, was half the price but in poorer condition.

Most sellers told me that sales here were very good and they sold just about everything they brought. A few said they didn't do well at all. I



*The registration tent at 5:30 a.m. on Wednesday.*

**AUTHOR'S ADDRESS: 8095 CENTRE LANE, EAST AMHERST, NY 14051**

think this had a lot to do with the quality and price of the merchandise offered. Sellers with items in poor condition found they couldn't get the price listed in the Bunis (now Slusser) price guide book. One very good friend, now 78 years old, told me of all the medical problems he had since I saw him last. He was selling off the best items in his collection so his wife wouldn't have to do it. He opened his table at 6 a.m. and most of it was sold in 40 minutes!

Being a collector of the brand, I noticed that there were four Federal radios for sale. A Model 110, GC, was priced at a very reasonable \$550 but was still there the next day. A Model DX type 58 was priced at a high \$1100 and there were two Federal 61s at \$1475 and \$1500, which is just over the Slusser price range. I noticed in the fifth edition Slusser price guide that the Federal 61 only increased \$50 in value since the fourth edition (Bunis).

Tom Perera had three extremely rare Enigma machines displayed (from Switzerland, Germany and England)! These devices were used to code and decode military messages during WWII. They were actually for sale, not just on display, but buyers would need a very thick pocketbook!

A nice Cutting and Washington receiver priced at \$700 was on the table a long time. I like C &

W because it was one of the predecessors to Colonial, a local Buffalo, NY company in the 1920s. There was a nice Atwater Kent Model 12 breadboard offered for \$1400. I still have my dad's AK 12. He had built home-brew sets earlier, this was his first factory-made set.

Rider's manuals were priced around \$25 each with Vol. I & II going for more. Rain Buttignol showed me his horn speaker built inside a model of Lindberg's Spirit of St. Louis aircraft. It was a one-of-a kind item because the model aircraft was hand built. He was asking \$1,500 for it. There was a very nice floor model Stromberg Carlson cone speaker with the three leg base for only \$200 and a Stromberg Carlson corner console in beautiful refinished condition for \$275. It looked like the one in the AWA museum except this one was finished blond rather than walnut. There were two AK #55 radios mounted in 6 legged Keil tables for about \$300 each. I have a friend who collects only this model radio! He had one owned by his father, and he told me how rare it was when he showed it to me. Later, I found him one for each of his 5 children! Jim Kreuzer had a very cute 1921 amateur spark transmitter and receiver. It had an automobile ignition coil in a wood box, a home made key transmitter, and a loose coupler crystal receiver. The latter had a buzzer to use as a signal source



*Some of the early wireless gear at the AWA Museum.*

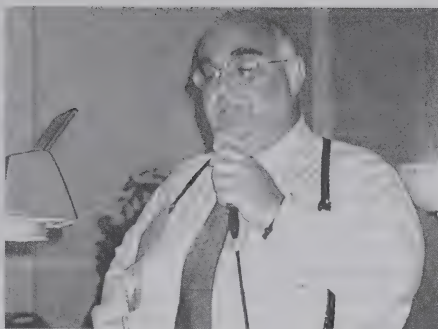


to find a sweet spot on the crystal. It was all mounted on one board and the asking price was \$400.

Was the flea market as big as last year's? I missed last year but saw that this year all of the paved spaces were taken. Perhaps a few more could have been squeezed onto the grass area but it was certainly still the biggest antique radio flea market in the country. Several members told me that they hope when the AWA moves to a new location the space for the flea market can be bigger so it is not necessary to restrict the spaces for selling. They didn't like it that they had to pay almost double the cost of the first space for the second. Of course this regulation prevents many from taking two spaces and limits the size of the area.

One couple who were already AWA members told me that they had a problem when they arrived at 6 am on the second day and were denied entry until they registered. The registration desk didn't open until 8 am, so they had to wait 2 hours to get in! Our club treasurer, who is also chief of security knew of this problem, and said they were allowing people in early as long as they registered later. This one couple somehow fell through the cracks. If this should happen to you next year ask for Stan Avery. He will see that you don't have to wait!

My comments regarding busing may not apply next year but I will make them anyway. The bus driver told me he made the loop to eight motels and back every 15 to 30 minutes. Two years ago I timed it at 10 minutes. Riders did complain about the longer wait and difficulty with moving big and heavy items back to their motel. I realize the firelanes must be kept open or



*Bart Lee holds forth at his ever-popular SWL forum.*

the fire department will shut the whole flea market down so AWA must restrict parking. The bus seems to be the only answer but it is a nuisance to members not staying at the site of the meet. Again more space is needed for parking as well as for setting up in the flea market. I hope our new location solves this.

The AWA museum tour was packed with more visitors than you could count! All were very excited with what they saw. The exhibits at the Annex building were also open. The museum is very much a part of the conference experience and the AWA intends to keep it that way! Few radio clubs have a museum and none can come close to matching this one. Concurrent with the museum tour was the Moonlight Restoration Forum held at the hotel. There were four short presentations on restoration issues and lots of time for members to ask questions and bring up restoration problems of their own.

Not being a ham, I decided to check out the flea market again Thursday morning rather than attend the Communication equipment auction. (*Note: results of the communication equipment auction will be found on p.00—mfe*) There were still good things to see. I was amused to see that one guy selling literature had a copy of the Federal book I wrote for \$15! I have been selling these for \$5 plus S & H! I like Colonial radio because it was a local Buffalo, NY company, but I spotted an early model Colonial 206 made while the company was still in Long Island City. It



*Buford Chidester (left) with replacement cones and other products to make your speaker look beautiful.*

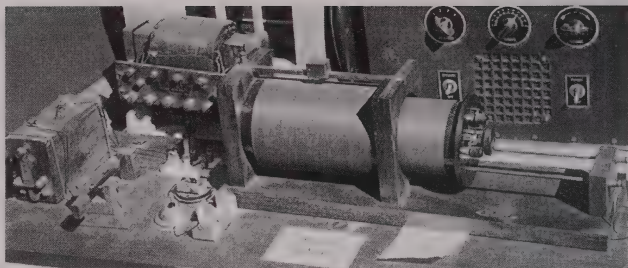
was big with fancy mechanical linkages and copper boxes shielding the individual stages. I thought it was a bargain at \$100, but where would I put it when I got it home?

Ed Bell had the longest Leutz superhet (except for the silver ghost) that I have ever seen in the back of his van. It wasn't for sale; he had just bought it at the meet. Good things are still available here. Another table you can't walk by without stopping is that of Buford and Jane Chidester. Buford is the expert on making replacement cones for early speakers. He can supply just about any type you desire at a reasonable price. I have done three replacements using his cones and they all turned out beautifully. This time I got one for a Thorola speaker. Buford and Jane are about to publish a reference book in color and with present day prices for many types of cone speakers. I saw the master copy and it is beautiful. I plan to get one as soon as they are available.

Since the theme of this meet was Stromberg-Carlson, I brought two large empty boxes for S-C. parts with me. These are very colorful and ornately decorated. I decided to give them to Ed Gable to sell on the AWA table. Ed thought they were so nice he decided to keep them for display at the museum.

The tube auction has been moved to Thursday evening to make more time for the rest of the auction on Friday. It ran about two hours. My single purchase was a lot of 3 VT-1 tubes. Two were good and one was a dud. I bid an even \$100. A few years ago when I needed a VT-1 to fill an empty socket I could only find one in the original box and it was \$100—so I thought 3 for the same price was okay. I may need them some day. I entered a Western Electric type 20SF with good filament in the original box in the auction and it sold for \$110.

The general auction began at 10 a.m. on Friday and ended just after 2 p.m. Perhaps it could be extended a little next year by allowing sellers to enter four lots of radios rather than three. This could add to the total sales, allow bidders to bid on a few more items, and perhaps extend the auction to three pm. I estimate that total sales about \$30,000. (Note: total sales for the tube and general auctions were \$37,037; sales at the communications equipment auction totaled about \$2500.00—ed)



*Jim Kreuzer's spark coil and loose coupler transmitter/receiver combination. Multi-tap transformer at upper left is not part of set.*

I noticed a number of items sold much below the prices listed in the new fifth edition Slusser price guide. I entered a Federal 61 in as nice condition as you will ever see. It sold for \$1300. The top Slusser price for a top condition set is \$1450. Perhaps it sold for less because my reserve price was \$1300 and this year the tag with the reserve was attached to the set where the bidder could see it during the auction preview. I also entered a VGC Clapp Eastham HR with a reserve of \$250. Guess what. It sold for \$250! The Slusser price is \$330-390. A big difference.

In general cathedral radios were selling for about \$100 to \$200 below the price guide prices and AK breadboards for \$200 to \$400 below. Are prices really going down that much? Did the recent Muchow auction have an effect? What about the internet? I don't know the answer but do remember when the AWA total auction sales  
(continued on page 31)



*Packing crate, spotted at the flea market, is much rarer than the set. They really packed them well in the 1920s.*



# AWA CONFERENCE AWARDS REPORT

*All photos by Dick Ransley unless otherwise credited.*

## The AWA Recognition Awards

These awards are traditionally presented on the last evening of the conference at the gala "Historical Banquet." Nominations for five of the awards are solicited from the AWA membership at large, and each winner is selected by a special committee charged with administering that particular honor. The awards and their 2000 winners are:

**The AWA Houck Award for Documentation** goes to an AWA member who has written several original articles on radio development or history in the *OTB*, *Review*, or other publication. (This can include a book on a related subject.) *Winner: Brian Belanger for his wide range of comprehensive articles relating to radio history.*

**The AWA Houck Award for Preservation** is for a member who, through personal accomplishment, has acquired, and preserved by documenting, an outstanding collection of radio artifacts. *Winner: Robert Schaumleffel for his board and conference activities and his untiring efforts in the preservation of historical artifacts relating to radio history.*

**The Bruce Kelley-OTB Award** is given to the member who publishes in *The OTB* an article judged to be the most outstanding, original, historical presentation of the award year. For this year, articles in the August and November, 2000 and the February and May, 2001 issues were considered. *Winner: Henry Bradford for his 2-part series about the Cape Breton Stations of the Marconi Transatlantic Radio Service appearing in the "Below 535" column of the August and November, 2000 issues.*

**The J. Albert Moore Award** comes to us through the Antique Radio Club of America, which was merged into AWA a few years ago. The award honors Mr. Moore's contributions to ARCA. As given by the AWA, it recognizes the *OTB* article, or series of articles, deemed to be the most outstanding of those dealing with radio hardware (radio sets, radio systems or components) printed during the award year. The issues considered are the same as those

considered for the Bruce Kelley-OTB Award. *Winner: Charles C. Kirsten for his article "Obsolescing a Vintage Tube Tester" in the February, 2001 issue.*

**The Taylor Award**, in memory of John Taylor, RCA TV Developer, is for "preserving television history." *Not awarded this year.*

**The Tyne Tube Award** is presented, in remembrance of Gerald F.J. Tyne, for contributions to preserving or documenting the history of tube technology. *Winner: Keith R. Thrower in recognition of his excellent books covering British radio valves from World War I onward.*

The two additional awards traditionally given at the Historical Banquet are:

**The President's Award** for outstanding service to AWA this year: *to Lauren Peckham for his continuing and outstanding support of the presidency and the organization, not only this year, but over a period of many years.*

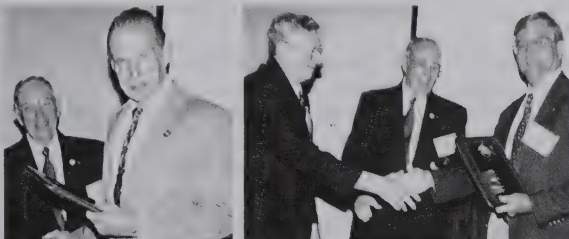
**The Linc Cundall Memorial Award** is presented to the winner of the Linc Cundall Memorial Old-Time CW Contest: *Bob Raide, W2ZM.*

## Contest Recognition Awards

Also presented at the banquet this year were the major old equipment contest awards:

**The Eunice Thompson "Best of Show" Award.** *Winner: David Kaiser for his Stromberg-Carlson Prototype Portable.*

**The Display Award.** *Winner: Merrill Bancroft for his James Milen display.*



*President Bill Fizette (at left, left photo) congratulates Robert Schaumleffel, recipient of the Houck Award for Preservation; and Lauren Peckham (at left, right photo) presents Houck Award for Documentation to Brian Belanger.*

**The Elle Craftsman Award.** *Winner: Ken Owens for his Browning Drake Regenaformer set.*

**The People's Choice Award** (decided by visitor's ballot). *Winner: David Kaiser for his*

*Stromberg-Carlson Prototype Portable.*

**Matlack Award.** *Winner: Floyd Engels for his Theremin Cello.*

**AWA/ARCA Houck Superheterodyne Award.** not given this year.

## 2000 Old Equipment Contest Winners

*Compiled by Contest Coordinator Geoffrey Bourne*

### THE STROMBERG-CARLSON THEME CATEGORIES (1 THROUGH 9):

#### Category 1-A. The 1920s Battery Sets

- 1st David Kaiser  
*1924 Prototype Portable using 199s*  
2nd Ralph Williams  
*Model 1-B*

#### Category 1-B. The 1920s AC Sets

- 1st Fred Crews  
*Model 635A*

#### Category 2. The 1920s-1930s Consoles

*No Entries*

#### Category 3. 1930s Cathedrals, Tombstones, Converters

- 1st Robert Lozier  
*Experimental Shortwave Converter*

#### Category 4. The 1940s Sets

- 1st Christopher Bacon  
*FM Radio (Old FM Band)*  
2nd Jan and Pete Grave  
*Model AWP-8 Allwave Portable*

#### Category 5. Speakers

- 1st Ralph Williams  
*Horn Speaker*

#### Category 6. Television 1940-1960

- 1st Jan and Pete Grave  
*Stromberg-Carlson TV*

#### Category 7. Company History

- 1st Jerry Simkin  
*Dealer Certificate*

#### Category 8. Advertising and Customer Documents

- 1st Geoffrey Bourne  
*Stromberg-Carlson Puzzle*  
2nd Peter Yanczer  
*Bronze Sign*

#### Category 9. Other Products

- 1st Ralph Williams  
*Display of Meters Designed by William Warren*

### THE STANDARD CATEGORIES (10 THROUGH 23):

#### Category 10. Passive Receivers

- 1st Bill Holly  
*Heathkit, Miller and Robin Crystal Sets*

#### Category 11. 1920s Superheterodyne Sets

*No Entries*

#### Category 12. 1920s Tuned RF Receivers

- 1st George Freeman  
*Henry Field Model 5*  
1st Mike Batsch  
*Marconi Model C Detector and 2-Stage Amplifier*  
2nd Bob Slagle  
*Slagle Model IV*  
3rd Peter Yanczer  
*National Monodyne*

#### Category 13. 1920s Regenerative and Reflexed Receivers

- 1st Merrill Bancroft  
*Maclite 1-Tube Receiver*  
2nd Bob Slagle  
*Reynrad 1-Tube Receiver*  
3rd Bud Larson  
*2-Tube Regen Homebrew*

#### Category 14. Cathedrals and Tombstones

- 1st Robert Lozier  
*Loewe Model EB-100*

#### Category 15. Radios in Disguise

- 1st John DeLoria  
*RCA Duncan Phyfe Table Radio*

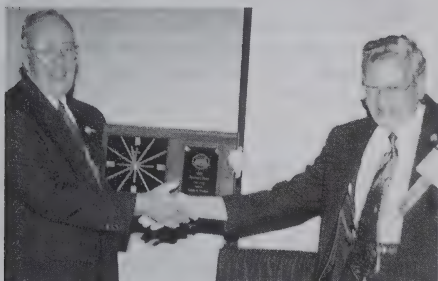
#### Category 16-A. Horn Speakers

- 1st Merrill Bancroft  
*Ace Horn Speaker*





Hugh Davies (left) says a few words after being introduced as next year's conference chairman. At right, Mike Raide announces that his dad Bob (W2ZM) is once more the winner of The Linc Cundall Memorial Old-Time CW Contest.



Lauren Peckham (right) receives President's Award from a beaming President Fizette.



#### SECRETARY PECKHAM HONORED AT LADIES' LUNCHEON

Joyce Peckham (right), AWA Secretary and wife of AWA Director Lauren Peckham, was recognized, at the annual Ladies' Luncheon, for her years of service as Conference Registration Coordinator. She received a quilt prepared by M.L. "Hutch" Frederick (left). Each block was signed by one of the cadre of volunteer women who have assisted Joyce over the years. Photo by Jim Frederick.

- 2nd Fred Crews  
*Saal Horn Speaker*

#### Category 16-B. Cone Speakers

- 1st Fred Crews  
*Trimm Cone Speaker*

#### Category 17. Test Equipment

- 1st Kirk Kline  
*RCA Radiotron Tube Tester*  
2nd Bruce Roloson  
*Radio Analyzers*  
2nd Mike Tannenbaum  
*Weston Model 566*  
3rd H.P. Bohlander  
*Supreme, Hickock, and Weston Meters*

#### Category 18. Tubes

- 1st Floyd Jury  
*Taylor Tube Display*

#### Category 19. Spark Transmitters & Artifacts

*No Entries*

#### Category 20. Vacuum Tube Transmitters and Receivers

- 1st Merrill Bancroft  
*James Millen Display*  
2nd H.P. Bohlander  
*1938 Single Signal Superhet*  
3rd Bud Larson  
*TNT Transmitter*

#### Category 21. Restoration of Appearance

- 1st Flavio Chavez  
*Stromberg-Carlson Model 325*

#### Category 22. Restoration of Operation

*No Entries*

#### Category 23. New or Rebuilt

- 1st Floyd Engels  
*Theremin Cello*  
1st Ken Owens  
*Browning Drake Regenaformer*  
2nd Ron Frisbie  
*Replicas of Historic Artifacts*

**Coming in the next issue: Album of selected contest first prize winners.**

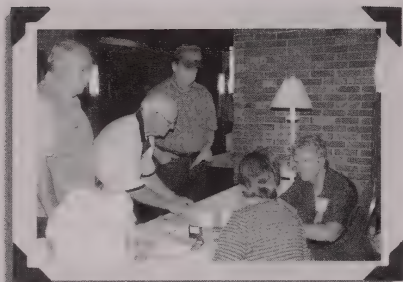
#### Major Contest Awards

Listed with AWA Recognition Awards

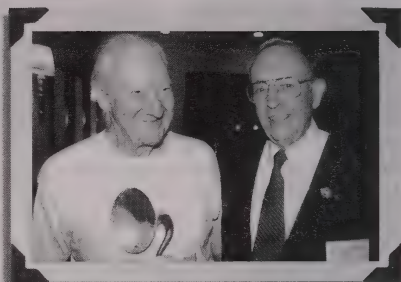
#### Contest Judges

Chris Bacon	Ken Lowther
Geoffrey Bourne	Ken Owens
George Freeman	Ralph Williams

# ANNUAL CONFERENCE CANDIDS



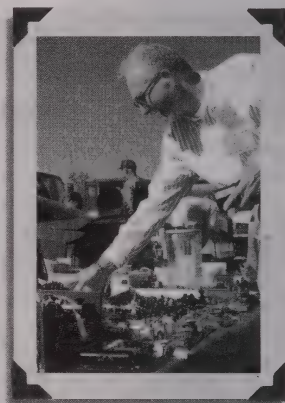
A busy moment at the registration desk. At far right, Fran Holly.



UK Member Alan Carter and AWA President Bill Fizette stop for a chat in the hallway.



Allan Pellnat (seated, right) and Paul Mooney (left) keep the records straight at the communications equipment auction transaction desk.



Key collector Bill Holly spots a goodie at the flea market.



Seth and Grace Ward share a laugh with Randy McGhee at the Book Fair.



Barber shop quartette provided nostalgic entertainment at the banquet.



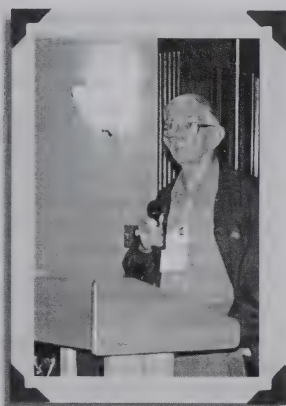


The auctions drew large crowds as always!



Our tireless conference photographer Dick Ransley (left) poses for a rare picture with wife Nancy and Peter and Edna Yanczer.

Vacuum tube expert George Fathauer speaks at the tube history seminar.



Ernie Hite with Flavio and Alicia Chavez



Auctioneer Walt Buffinton (left) with some of the auction staff: Lauren Peckham (standing), Richard Neidich (seated, foreground), Ted Horvath.



Mamoru Fujimuro and Museum Curator Ed Gable at the banquet.

# AWA CONFERENCE AUCTION REPORT

*Sale prices for selected items from the AWA 2001 Conference auction records. Every attempt has been made to ensure accuracy in reporting these results, but the AWA cannot assume responsibility for any errors that may occur.*

## RESULTS OF COMMUNICATIONS EQUIPMENT AUCTION

ABBOTT	TR-4 GOOD; \$30.00
GONSET	COMM II GOOD; \$15.00
HAMMARLUND	HQ-145 VERY GOOD; \$170.00
HAMMARLUND	PEAKER GOOD; \$50.00
HALLICRAFTERS	CRX1 GOOD; \$20.00
HALLICRAFTERS	S-40; POOR \$25.00
HALLICRAFTERS	S-40 PARTS SET; \$22.00
HALLICRAFTERS	S-40B FAIR; \$40.00
HALLICRAFTERS	S-120 GOOD; \$22.00
HALLICRAFTERS	SP-23 GOOD; \$60.00
HALLICRAFTERS	SX-24 GOOD; \$75.00
HALLICRAFTERS	SX-28A GOOD; \$375.00
HALLICRAFTERS	SX-42 FAIR; \$75.00
HALLICRAFTERS	SX-71 + SPKR GOOD; \$120.00
HALLICRAFTERS	SW-500 FAIR; \$15.00
HALLICRAFTERS	TO KEYER GOOD; \$40.00
HEATH	AR-3 POOR; \$20.00
HEATH	DX-100 POOR; \$30.00
HOME BREW	POWER SUPPLY NEW; \$40.00
HOME BREW	REGEN RX NEW; \$170.00
HOME BREW	TNT TRANS. NEW; \$140.00
HOME BREW	TX FAIR, LESS TUBES; \$50.00
MEISSNER	SIGNAL SHIFTER FAIR; \$32.00
MEISSNER	SIGNAL SHIFTER GOOD; \$52.00
MIL	RT-505 GOOD; \$45.00
MILLEN	90800 TX GOOD; \$50.00
MULTI-ELMAC	AF-67 GOOD; \$50.00
NATIONAL	HRO SPEAKER GOOD; \$65.00
NATIONAL	NC-46 VERY GOOD; \$125.00
NATIONAL	NC-57 POOR; \$27.00
NATIONAL	NC-60 SPECIAL FAIR; \$20.00
NATIONAL	NC-183 FAIR; \$60.00
NATIONAL	SW-3 GOOD, 1 COIL; \$175.00
RADIO SHACK	DX-300 GOOD; \$60.00
RAYTHEON	4D32 NEW; \$24.00
RME	DB-20 FAIR; \$15.00
ROSS	VINTAGE RX GOOD; \$90.00
SBE	EXCITER FAIR; \$25.00
VIBROPLEX	BUG GOOD; \$105.00

## ADVERTISING AND PROMOTIONAL ITEMS

ATWATER KENT	ELECTRIC SIGN; \$325.00
ATWATER KENT	ADVERTISING; \$350.00
CBS	TV STATION SIGN; \$35.00
EDISON	BANNER, 3' x 4'; \$425.00
PHILCO	ADVERTISING BANNER; \$10.00
RCA	XL100 SIGN; \$5.00

## BOOKS/MAGAZINES/ETC

ALLIED RADIO CATALOG (1930); \$12.50
ALLIED RADIO CATALOG (1940); \$11.00
AMERICAN TELEGRAPHY (190); \$60.00
ANTENNAS (JOHN KRAUS); \$22.50
ARRL HANDBOOKS 1945, 1946, 1947; \$17.00
BELL SYSTEMS TECHNICAL JOURNALS; \$75.00
BITS OF WIRELESS HISTORY; \$20.00
CBS NETWORK PHOTO AND SCRAP BOOK; \$220.00
EIMAC TUBES VACUUM TUBE RATING; \$17.50
ELECTRIC WAVES (HERTZ); \$230.00
ELECTRICIAN & MECHANIC (SAMPSON, 1912); 20.00
ELECTRICIAN'S TEXTBOOK (BULLARD); \$17.50
ELECTRONICS AUSTRALIA, BOX LOT; \$22.50
FEDERAL CATALOGUES (2); \$85.00
GE CO PATENTS (10); \$140.00
GENERAL RADIO CATALOG; \$20.00
INT'L RADIO TUBE ENCYCLOPEDIA; \$80.00
KEN CORNELL SCRAPBOOK; \$20.00
LAFAYETTE RADIO CATALOGUE (1935); \$11.00
MIT RADIATION LAB BOOKS #19, 21, 25; \$20.00
NBC NETWORK PHOTO AND SCRAP BOOK; \$725.00
OFFICIAL SERVICE MANUALS; \$150.00
PHILCO YEAR BOOK; \$5.00
PHILLIPS TUBE INFO; \$40.00
PRACTICAL TELEGRAPHY (1921); \$12.50
PROCEEDINGS OF THE IRE; \$5.00
PROCEEDINGS OF THE IRE; \$85.00
RADIO EQUIP & SUPP CAT, 1924, 1925; \$45.00
RADIO RETAILING (1934); \$85.00
RMS YEARBOOK (PHILCO, 1941); \$20.00
RMS YEARBOOK (PHILCO, 1942); \$20.00
QST COMPLETE YEAR 1927; \$27.50
QST COMPLETE YEAR 1929; \$10.00
QST COMPLETE YEAR 1932; \$8.00
RADIO (WALLACE); \$3.00
RADIO AMATEUR CALL BOOK (1955); \$5.00
RADIO HANDBOOK (8TH EDITION); \$5.00
RADIO NEWS (1931); \$30.00
RCA RADIOTRON DESIGNER HANDBK; \$17.50
RCA RADIOTRON DESIGNER HANDBK; \$10.00
RCA SEMICONDUCTOR MANUAL (1960s); \$12.00
RCA SERVICE MANUAL \$55.00
SHORTWAVE WIRELESS COMMUNICATION; \$2.00
TELEFUNKEN TUBE INFO; \$55.00
UK TUBE INFO; \$32.50
VICTOR RECORD CATALOG (OCTOBER 1921); \$1.00
VINTAGE RADIO (MCMAHON, 1981); \$8.00
WIRELESS AGE 1919 AND 1920; \$45.00
WIRELESS WORLD MAGAZINE; \$15.00
WLW SCRAPBOOK; \$35.00
ZENITH SERVICE MANUAL #1; \$35.00



## RESULTS OF GENERAL AUCTION

### COMMUNICATIONS GEAR

EMPIRE	WALKIE TALKIES; \$15.00
JFC ELEC	H-156/U HANDSET; \$1.00
WE	1903 PHONE TESTER; \$25.00

### CRYSTAL SETS

ASTROPHONE	ASTROPHONE DELUXE; \$450.00
MARCONI	CRYSTAL SET; \$260.00
REPRO	CRYSTAL RADIO; \$50.00
WIRELESS RADIO	CRYSTAL; \$200.00

### MICROPHONES

JRC	PVNIOM 101; \$110.00
RCA	MODEL 74B AND STAND; \$170.00

### MILITARY

GOV OF CANADA	"UNIT #1"; \$30.00
GOV OF CANADA	MARK 5 TELEPHONE SET
	DMKV; \$75.00

### SPEAKERS

AMPLION	6301 WOOD HORN ATWATER KENT
	2300W SPEAKER (POOLEY); \$45.00
JENSEN	SPEAKERS: 2-12" 2-10"; \$210.00
MAGNAVOX	R3B SPEAKER; \$90.00
MAGANVOX	R3C HORN; \$75.00
ROBERTS	HI FI SPEAKER; \$20.00

### MISCELLANEOUS

BENWOOD	ROTARY GAP; \$210.00
DEFOREST	COIL ASSEMBLY; \$40.00
EDISON	EARLY PRIMARY CELL; \$95.00
ERICKSON	1898 TELEPHONE; \$300.00
ISOLANTIC	#420 ANTENNA SWITCH; \$35.00
MAJESTIC	ALARM CLOCK; \$850.00
MARCONI	STEREO VIEW CARD; \$260.00
MARCONI AND LODGE	"SPY" PRINTS; \$170.00
OVERBECK	QUACK MEDICAL MACHINE; \$70.00
PACKARD ELECT. CO	SPARK TRANSFORMER; \$310.00
RCA	45 RPM Changer, 9-5Y; \$10.00
RCA	LIGHTED LOGO; \$300.00
SONY	TAPE RECORDER; \$5.00
WE	7A; \$525.00
WIRELESS SPEC	#5002A ANTENNA SWITCH; \$50.00
	INDUCTION COIL; \$60.00
	375 N "RADIO QUESTIONNAIRE"; \$32.50

### RECEIVERS

AMERICAN BOSCH	MODEL 28; \$15.00
AMPLION	AR-114; \$725.00
ASTRA LARK	CRYSTAL DIODE RADIO; \$70.00
ATWATER KENT	10C; \$700.00
ATWATER KENT	MODEL 5 FROM CORRECT PARTS;
	\$2,250.00
ATWATER KENT	AK 60 W/F4A SPEAKER; \$27.50
ATWATER KENT	44; \$20.00
ATWATER-KENT	4340; \$625.00
BRETING	14 XTAL; \$350.00

BROWNING	TOBE TUNER; \$260.00
BRUNSWICK	5KR WITH SPEAKER; \$80.00
BUSH	DAC 90A; \$190.00
CLAPP-EASTHAM	#HR; \$250.00
CROSLEY	10-135; \$110.00
CROSLEY	150; \$70.00
CROSLEY	D25WE METALLIC GREEN; \$65.00
DAY-FAN	OEM-7; \$60.00
EMERSON	MIDGET RADIO; \$35.00
EVEREADY	PORTABLE; \$40.00
FEDERAL	61; \$1,300.00
FREED EISEMANN	NR-7; \$180.00
FRESHMAN	MASTERPIECE; \$100.00
FRESHMAN	MASTERPIECE K-7; \$80.00
GAROD	RAF; \$50.00
GE	221 BC/SW; \$32.50
GE	GE-H-73; \$25.00
GRAYBAR	MODEL 8; \$50.00
GREBE	MU-1; \$65.00
HALLICRAFTERS	S-19; \$70.00
HEATHKIT	SHORT WAVE RCVR GR-64; \$20.00
HOMEBREW	1-TUBE RADIO; \$100.00
HOMEBREW	SUPERHET KIT; \$45.00
IMPERIAL	CATHEDRAL RECEIVER; \$135.00
LEUTZ	GOLDEN LEUTZ PLIODYNE 6; \$190.00
MADISON-MOORE	SUPERHET KIT RECEIVER; \$1,900.00
MAGNAVOX	MODEL D FLOOR MODEL; \$65.00
MAJESTIC	MODEL 15 CLOCK RADIO; \$350.00
MAJESTIC	#290 CATHEDRAL; \$260.00
MARCONI	VI; \$110.00
MERCURY	SUPER 10; \$1,100.00
MITCHELL	LAMP RADIO; \$120.00
MONTGOMERY WARD	AIRLINE SPECIAL; \$100.00
NORTHERN ELECTRIC	R-4; \$1,050.00
PATTERSON	PR15 WITH DOCS; \$400.00
PHILCO	MODEL 20; \$150.00
PHILCO	MODEL 70; \$150.00
PHILCO	MODEL 86(?) CATHEDRAL; \$70.00
PHILCO	37-260; \$120.00
PHILCO	41-425; \$20.00
PHILCO	47-355; \$50.00
PHILCO	50-526 TRANSITONE; \$10.00
RCA	MODEL AR-812; \$110.00
RCA	RADIOLA II; \$260.00
RCA	RADIOLA 60; \$25.00
RCA	RADIOLA RC (RA-DA); \$200.00
RCA	Q-36; \$210.00
RCA	MODEL T6-9 TOMBSTONE; \$52.50
RCA	MODEL 5T1 (CANADIAN); \$180.00
RCA	18; \$32.50
RCA	94BT1 (MADE IN CANADA); \$65.00
RCA	103; \$80.00
REMLER	TYPE 330 CONTROL PANEL; \$75.00
SPARTON	517; \$650.00
SILVER-MARSHALL	ME-17; \$175.00
STEWART WARNER	R3041-A; \$230.00
STEWART-WARNER	Model 102A "APARTMENT SET";
	\$225.00
STEWART-WARNER	9001-F; \$70.00
THERMIODYNE	MODEL 6; \$100.00

THOMPSON	NEUTRODYNE W/SPEAKER; \$160.00
US	CATHEDRAL
VICTOR/NORTHERN	R-50; \$270.00
VOLKSEMPFANS	VE 30W; \$250.00
WARDS AIRLINE	MODEL 14BR-511A; \$90.00
ZENITH	ROYAL 500; \$30.00
ZENITH	ROYAL 1000; \$60.00
ZENITH	TRANSOCEANIC; \$50.00
ZENITH	R 7000; \$185.00
ZENITH	7S CHAIRSIDE; \$125.00
ZENITH	ROYAL 3000-1; \$100.00
	TURTLE RADIO; \$160.00

#### TELEGRAPH EQUIPMENT

BOY SCOUTS	TWIN 505 SIGNAL SET; \$20.00
EDISON	WET CELL; \$42.50
NANOMETER	TELEGRAPH KEY; \$55.00
SONY	TYPE 2 TELEGRAPH SOUNDER; \$30.00
USN	CODE LIGHT BLINKER; \$5.00
	VIBROPLEX \$60.00
WOLTSKY	FIELD TELEPHONE; \$80.00
	GERMAN WWII KEYS (2); \$120.00
	UNUSUAL SPANISH PADDLE; \$95.00

#### TEST EQUIPMENT

JACKSON	1" SCOPE; \$22.50
JACKSON	TVG-2 SIGNAL GENERATOR; \$20.00
JEWELL	MODEL 209; \$40.00
KELLOGG ROGERS	AC-32; \$30.00
PRECISION	SIGNAL GENERATOR; \$25.00
SIMAZU	CIRCUIT TESTER TRA-18 TYPE KAH; \$50.00
TEKTRONIX	511-A WITH MANUAL; \$10.00
WESTON	799 INSULATION TESTER; \$5.00
	PBX TELEPHONE TEST SET; \$22.50

#### RESULTS OF VACUUM TUBE AUCTION

ATWATER KENT	# 607 RECTIFIER
AUDIOTRON	DOUBLE FILAMENT; \$65.00
CUNNINGHAM	30z BRASS BASE, TIP; \$60.00
DEFOREST	552; \$65.00
DUMONT	K1234; \$5.00
EIMAC	450TL; \$25.00
EIMAC	450TL; \$25.00
FOTOS	PHOTOTUBE (FRENCH); \$75.00
GE	813; \$14.00
GE	GL-203A, GOOD FILAMENT; \$11.00
GE	VT 4; \$10.00
GE	VT-4C, GOOD FILAMENT; \$10.00
GE	1787; \$55.00
JFD	TUBE ADAPTERS; \$50.00
MAJESTIC	G-45; \$45.00
MOORHEAD	\$55.00
NATIONAL	GEX RECTOBULB; \$5.00
NATIONAL ELECTRO	8421 Nixie; \$18.00
NATIONAL UNION	NX-245; \$31.00
NORTHERN ELECTRIC	102-F; \$40.00

PENTA	899; \$15.00
PHILLIPS	REPRO DEFOREST AUDION; \$90.00
RAYTHEON	GLO-LAMP TV 1½" x 1½"; \$100.00
RCA	203A; \$30.00
RCA	803, GOOD FILAMENT; \$10.00
RCA	UX-245; \$14.00
RCA	UX852; \$15.00
RCA	WD11, BLACK BASE; \$35.00
RCA	8134 VI VIDICON; \$10.00
RCA	3 IMAGE ORTHICON (8673-5280-7293); \$30.00
RCA	5820 IMAGE ORTHICON; \$32.00
SIF	"TM" 4-VOLT TRIODE; \$110.00
SIF	"TM" 4-VOLT TRIODE; \$120.00
SODION	D-21; \$95.00
SPERRY	SAL-219 KLYSTRON; \$20.00
TAYLOR	HD 211 C; \$20.00
TELEFUNKEN	RE16 WITH SOCKET; \$125.00
TELEFUNKEN	RE68; \$40.00
USN	CG 1787 4 PIN, GOOD; \$150.00
WE	101F AND 102F (TOTAL OF 6); \$599.00
WE	205f; \$100.00
WE	216-A; \$65.00
WE	261-A; \$90.00
WE	343 3-KW TRIODE; \$65.00
WE	350B (QTY OF 2, NOS); \$400.00
WESTINGHOUSE	VV 204 A; \$25.00
WESTINGHOUSE	SPECIAL TUBE; \$50.00
	2 GOOD, 1 DUD GOLD-TIP VT-1S; \$100.00
	8 GOOD UX-199s; \$80.00
	2 01As, 1 00A, BRASS BASE; \$25.00
	466 N
	8 GOOD UV-199S; \$90.00
	4 GOOD WD-11s; \$130.00
	6 BRASS, 2 BAKELITE; \$170.00
	EARLY X RAY TUBE GAS(ION) TYPE; \$175.00
	TUBULAR AUDION; \$140.00
	UV-199; \$40.00
	S TUBE RECTIFIER; \$35.00
	WW2 GERMAN TUBES (3); \$40.00
	WW2 RADAR & VHF TUBES (11); \$45.00
	WW2 RADAR TUBES (4); \$65.00
	WW2 AND LATER RADAR/VHF(13); \$30.00
	WW I TUBE; \$50.00
	TUBULAR AUDION W/ BRASS HOLDER, GOOD; \$140.00
	MODERN COLD CATH XRAY TUBE; \$55.00
	892R TRIODE; \$80.00 69 N
	GEISSLER TUBES; \$45.00
	UV 202 (6); \$95.0
	SSE-120W SCOPE TUBE (JAPANESE); \$20.00
	807(4); \$7.00



# NEW BOOKS AND LITERATURE



EDITED BY **DAVID W. KRAUTER**, 506 E. WHEELING ST., WASHINGTON, PA 15301 E-MAIL [krauter@sgi.net](mailto:krauter@sgi.net)  
PLEASE INCLUDE SASE FOR REPLY.

*Books to be reviewed in this column should be sent directly to David Krauter at the address above. After review, all books become a permanent part of The AWA Library, which is located in The AWA Electronic Communication Museum and is open to members for browsing and research.*

## **John Logie Baird, Television Pioneer**

*By Russell Burns. (IEE History of Technology Series 28). Published 2000 by Institution of Electrical Engineers, Michael Faraday House, Six Hills Way, Stevenage, Herts. SG1 2AY, UK. Email [jsears@iee.org.uk](mailto:jsears@iee.org.uk). 6 1/4 by 9 1/2 inches, 417 pages, hardcover, \$95.00.*

Another thoroughly-researched, professional and beautifully-produced volume from the IEE. Burns knows his subject well and has contributed several other volumes to IEE's outstanding series. (See list below). Burns also had access to material not available to other Baird biographers, particularly relating to Baird's business dealings.

John Logie Baird considered himself to be the inventor of television. So do I. By 1932 he had devised and demonstrated wired and wireless transmission of moving images, noctovision (infra-red television), two-way television, phonovision (storage of television images on phonograph records), transatlantic television, color television, stereoscopic television, zone television (using separate channels to produce separate areas of the picture) and large-screen (cinema) television, all using scanning discs.

But Baird did not invent television out of thin ether, so to speak. He was preceeded and influenced by the work of many investigators. Burns provides a list of these on page 36. Just as the list of inventors of the radio tube could be extended back to Thomas Edison in 1883, so too the list of television inventors could be extended back to Willoughby Smith, who in 1873 discovered that the resistance of selenium changes depending on how much light strikes it. Paul Nipkow designed but did not build a television system in 1884. Baird, however, brought everything together and patented and demonstrated working instruments.

Like many others, Baird had a few false starts early in his career. Having decided not to follow in his father's footsteps as a minister, he pursued a career as a purveyor of cheap soap. (Years later Baird titled his autobiography *Sermons, Soap and Television*). In 1919 Baird traveled to the

West Indies, partly to find weather beneficial to his health. There, in an open hut in the jungle, he tried his hand at manufacturing citrus and guava jams to be marketed locally and in England. An immediate problem arose: flying insects, attracted by the smell of the cooking jam, fell into it. Did the jam go to market anyhow?

Returning to England in 1920, Baird began to pursue his television ideas. Initially he had to make do with bare minimum resources, particularly money, equipment and working room. This forced him to invent with simple techniques and basic materials, and to exploit each material to its maximum use. This design practice carried over into his later work. For example, when it became desirable to combine sound and video reproduction in the same television receiver (instead of using a separate radio for the audio signal) Baird came up with the brilliant, though evidently unrealized, idea of having the scanning disc perform double duty as the speaker diaphragm! (See British patent 318,278).

In attempting to present an objective evaluation of Baird's work, Burns often compares Baird with other inventors, particularly Marconi, and with other companies. Here Baird, the small independent inventor, frequently outshone the work of the R&D departments of the BBC, RCA, EMI, etc.

Baird both benefitted from and suffered from being first with television. His many early successes blinded him and others to the fact that he came to television through the dazzling but dead end of mechanical generation and reproduction. In 1928 he wrote, "The use of the cathode ray is beset with the greatest difficulties, and so far, no practical success has been met with in its application." Thus he stuck by mechanical television too long after others realized its insurmountable limitation, the scanning disc.

Still, his head was as full of ideas about television as Edison's was about everything else, and in 1942 Baird demonstrated his three-gun color CRT. But from an historical perspective one wishes Baird could somehow have been

"bumped over" into electronic television at a much earlier point in his career so that we could have reaped more of the benefits of his thinking in that area. But of course, though history can be and often is rewritten, it cannot be relived.

This is the second volume of the IEE History of Technology series to be reviewed here. A review of a third volume in the series follows this one. Others will be reviewed in future issues. The entire series is:

1. *Measuring instruments—tools of knowledge*, P. H. Sydenham
2. *Early radio wave detectors*, V. J. Phillips
3. *A history of electric light and power*, B. Bowers
4. *The history of electric wires and cables*, R. M. Black
5. *An early history of electricity supply*, J. D. Poulter
6. *Technical history of the beginnings of radar*, S. S. Swords
7. *British television—the formative years*, R. W. Burns
8. *Hertz and the Maxwellians*, J. G. O'Hara and D. W. Pricha
9. *Vintage telephones of the world*, P. J. Povey and R. A. J. Earl
10. *The GEC Research Laboratories 1919-84*, R. J. Clayton and J. Algar
11. *Metres to microwaves*, E. B. Callick
12. *A history of the world semiconductor industry*, P. R. Morris
13. *Wireless: the crucial decade, 1924-1934*, G. Bussey
14. *A scientist's war—diary of Sir Clifford Paterson*, R. Clayton and J. Algar (Editors)
15. *Electrical technology in mining: the dawn of a new age*, A. V. Jones and R. Tarkenter
16. *"Curiosity perfectly satisfied:" Faraday's travels in Europe 1813-1815*, B. Bowers and L. Symons (Editors)
17. *Michael Faraday's "Chemical notes, hints, suggestions and objects of pursuit" of 1822*, R. D. Tweney and D. Gooding (Editors)
18. *Lord Kelvin: his influence on electrical measurements and units*, P. Tunbridge
19. *History of international broadcasting*, J. Wood
20. *The very early history of radio, from Faraday to Marconi*, G. Garratt
21. *Exhibiting electricity*, K. G. Beauchamp
22. *Television: an international history of the formative years*, R. W. Burns
23. *History of international broadcasting*, Volume 2, J. Wood
24. *The life and times of A. D. Blumlein*, R. W.

Burns

25. *History of electric light and power*, 2nd edition B. Bowers
26. *A history of telegraphy*, K. G. Beauchamp
27. *Restoring Baird's image*, D. F. McLean  
(Series editors: Dr. B. Bowers, Dr. C. Hempstead).



## The Life and Times of A.D. Blumlein

By Russell Burns. (IEE History of Technology Series 24). Published 2000 by Institution of Electrical Engineers, Michael Faraday House, Six Hills Way, Stevenage, Herts. SG1 2AY, UK. Email [jsears@iee.org.uk](mailto:jsears@iee.org.uk). 6¼ by 9½ inches, 534 pages, hardcover, \$95.00.

Burns has obviously written the Blumlein biography here, but read the title carefully. The book actually has two subjects: Blumlein and the times in which he lived. Thus a considerable portion of the book deals not with Blumlein directly but with the electronic, corporate or military worlds in which he worked. This is particularly true of the second half of this long book, which could almost have been published as a separate book on radar in World War II.

Some readers may not recognize Blumlein's name, though probably all readers have benefited, directly or indirectly, from his many electronic inventions, innovations and developments. These include the +45/-45 degree recording groove in stereo phonograph records (what would Blumlein think of the CD?), the cathode follower circuit (now called the emitter follower) and the slotted television transmission antenna. Blumlein also invented the circuit which he called the long-tailed pair, thus proving he had a sense of humor.

Burns provides documentation to show that Blumlein's 1932/33 work in negative feedback "considerably predates" that of Harold S. Black. (Nevertheless, Black's epiphanic realization of negative feedback occurred in New York City in 1927). Blumlein's 120+ patents were for telephony, monophonic and stereo recording, measurements, antennas and cables, power supplies, cathode ray tubes and circuits, DC restoration, modulation, AGC, delay lines and radar.

The publisher's blurb on the back cover of the book refers to the biography as "meticulous" and there is no arguing this point. For example, in the chapter on Blumlein's personality, Burns discusses Blumlein's sense of humor. But first he takes a page or so to review classical theories of humor, quoting Hobbes, Schopenhauer, Pascal and Sir Philip Sydney!

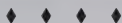
Blumlein lived in the Park Royal section of



London during the blitz of WWII. Always the innovator, he redesigned the window attachments in a room of his house according to his ideas about safety during bomb blasts. When in fact a bomb buried itself in the back garden a few yards from the house before detonating, the blast suction pulled the windows out of the room as Blumlein planned. The occupants of the room, including Blumlein's wife, were unhurt but described feeling the air being sucked from the room. Blumlein also installed a warning system in the attic of his house to detect the presence of incendiary bombs that had penetrated the roof of the building.

One of the reasons for Blumlein's relative obscurity among radio enthusiasts may be the brevity of his career. Born in 1903, he died in 1942 in a military airplane crash. The purpose of the flight was to test the H<sub>2</sub>S radar system that Blumlein and others had designed. His death was called a "national disaster" by the British Secretary of State for Air.

A classic danger in writing biography is the over-valuing of the subject's contributions and historical stature. Indeed Burns refers to Blumlein with the phrase "the greatest British electronics engineer of the twentieth century". This book goes a long way toward validating that idea. Its very thorough treatment (some will say too thorough) assures that it will remain *the* Blumlein biography for years.



### Collector's Guide to Antique Radios

*By John Slusser and the staff of Radio Daze. Fifth edition published 2001 by Collector Books, P.O. Box 3009, Paducah, Kentucky 42002-3009. www.collectorbooks.com. 8½ by 11, 285 pages, softcover, \$19.95.*

Buy this book even if only to get a copy of the reproduction of Jim Daly's artwork on the front cover. Here slouches dreamy-eyed Billy America, listening to the family's brand-new 1932 Philco 71B roundtop. Billy needs a haircut, his shirt and bib overalls must soon see a washing machine, and at least one sole of his shoes needs to be covered again with a piece of cardboard, but all these matters can wait. Right now the score is tied and its getting pretty late in the ninth.

More nostalgia awaits us inside, incited by the beautiful color photographs of the We-had-one-just-like-that-when-I-was-a-kid! variety. The book follows the now-familiar style of the first four editions by Marty and Sue Bunis. Each entry contains a two- or three-line description of the radio, ending with a suggested current retail

price on the flea market or garage sale scene.

Slusser provides a schema for his determination of suggested prices in the front matter of the book. Suggested prices are sure to cause disagreement and conversation, and that is one of the values of the book. A Philco 71 is listed in the first (1991) edition of this series for \$175, in the 1992 edition for \$250, 1995 for \$250, 1997 for \$200-250, and current edition for \$230-280. Are these prices fair? Are they accurate? Are they even realistic? Each buyer or seller will have to determine that for themselves.

## NEW REVIEWS OF OLDER BOOKS

### From Immigrant to Inventor

*By Michael Pupin. 1923 edition out of print. Reprinted 1980 Ayer Co. Pubs. Inc., 6 Lower Mill Road, North Stratford, NH 03590. (888) 267-7323. Hardcover, 396 pages.*

Biography merely permits us to snoop into other peoples' lives; autobiography invites us to. Michael Pupin's autobiography is no exception, but modern readers are advised to consider that Pupin was born to Serbian peasants in the middle of the 19th century in Idvor, a village that was part of Austria-Hungary and so small it "cannot be found on any map." Pupin spent the first 14 years of his life there, and the rest of his life was thoroughly formed by his childhood experiences.

Thus Pupin's book is not what we would today call a "quick read." It is slow and ponderous, written with a 19th century outlook. It is the kind of book one might set aside to read after one retires. Pupin often employs broad metaphors presented in complicated sentences and paragraphs so long they won't fit on a single page. Nevertheless, his autobiography earned a Pulitzer Prize in 1924.

Don't look here for details of Pupin's inventions or research. Social and philosophical commentary makes up a good portion of the text. Here, for example, is Pupin on racism: "Racial antipathy is one of the saddest of psychic derangements; and, although it is a repulsive product of modern nationalism, the world does less than nothing to get rid of its insidious poisons. European civilization is being destroyed by it." Shall we add to his list of talents the ability to predict?

Pupin continually harks back to his days as a young herdsman in Idvor, charged with the safety of cattle during the night when they were vulnerable to theft by neighboring villagers. He and his fellow herdsman communicated secretly by thrusting a knife into the ground and tapping

on the knife handle. Pupin quickly learned that dry, hard soil transmitted messages much farther than wet or loose soil.

He claimed later in life to have used this knowledge when in 1899 he (and/or others) invented the loading coil that permitted long-distance wired telephony. His patent came none too soon, as George Campbell and Edwin Colpitts of American Bell were working in the same area. Telephone lines that incorporated the invention were said to have been "pupinized" and were used worldwide.

It is possible to carry allegiance to a metaphor too far, however, and thereby draw the wrong conclusions. Here is Pupin writing in 1923: "Every now and then we are told that wireless signals might be sent some day to the planet Mars. The judgment of a former herdsman of Idvor considers these suggestions unscientific for the simple reason that we cannot get a ground on the planet Mars and, therefore, cannot take it into close partnership with our Hertzian oscillators. Without that partnership there is no prospect of covering great distances."

At the age of 15 Pupin traveled alone to America, arriving in New York City with five cents in his pocket and a great need to convince immigration authorities that he should not be deported. He did that by telling them of his admiration for Abraham Lincoln and Benjamin Franklin. He got a job as a mule driver, and immediately set about learning English. Later he taught himself French and German. (A recent PBS documentary on the life of another Serbian, Nikola Tesla, has the young Tesla arriving in New York City with *four* cents in his pocket. There are other parallels between the early careers of Pupin and Tesla, but that is another story).

Throughout his career Pupin sought an answer to the question *What is light?* When his professors at Columbia College (now Columbia University) in New York City could not provide an adequate answer, he traveled to Cambridge University, meaning to study with his idol, James Clerk Maxwell, only to find upon his arrival that Maxwell had died four years previously. Still seeking answers to his question he next traveled to the University of Berlin. There his Ph.D. advisor was the great physicist Hermann von Helmholtz. Pupin also idolized Helmholtz, and refers to him throughout his book by his German title, "Excellenz von Helmholtz."

Pupin received 34 patents for his work in the practical aspects of telecommunications. (Six of them were issued jointly to Pupin and his pupil, the soon-to-be successful—though not famous—

Edwin H. Armstrong.) Nevertheless his book can be seen as an extended plea for the virtues of pure research over applied research. He wrote, "The worship of the eternal truth and the burning desire to seek an ever-broadening revelation of it constitute the mental attitude which I call 'idealism in science.'"



## The Tempter

*By Norbert Wiener. Published 1959 by Random House. Out of print, available through bookfinder.com*

Fiction is rarely reviewed in this column, but for the intriguing combination of Norbert Wiener (1894-1964), Michael Pupin (1858-1935), Oliver Heaviside (1850-1925) and George Campbell (1870-1954) we must make an exception.

Norbert Wiener, a mathematician and one of the founders of cybernetics, was a genius who "spoke many languages but was not easy to understand in any of them."<sup>1</sup> Obtuseness is not the case, however, with Wiener's posthumous book, *Inventions: The Care and Feeding of Ideas*, in which he is almost brutally cogent and logical.

Many OTB readers would be interested in reading *Inventions*, though it is not appropriate for review here. But in about ten pages of the book Wiener outlines the historical, legal and moral relationships that developed among Oliver Heaviside, Michael Pupin and George Campbell over the invention of the telephone line loading coil.

By about 1900 the telephone industry wanted to expand from intra-city service to inter-city service, but there was a technical problem. Long before telephone signals became unusable because of attenuation in long distance lines they became unusable because of distortion. Heaviside, Pupin and Campbell all worked on this problem. The general solution, contrary to standard opinion, lay in "loading" the lines by adding inductance coils.

The solution having been found, the inevitable questions arose: who was first and who gets the money? (These are not always the same person). Almost certainly priority must go to Heaviside, but he did not patent his work. Pupin did patent his work, but it may have been preceeded by Campbell. Campbell's employer, AT&T, nevertheless bought Pupin's patents for about a half-million dollars. The ploy was that buying patents from an "outside" researcher would look better in a patent dispute than if AT&T used the work of one of their own employees.

Wiener became so interested in the Heavi-



side/Pupin/Campbell story that he wrote a novel about it. Wiener was certainly a better mathematician than a novelist. In *Inventions* Wiener described Heaviside as "an undersized, hungry, deaf, cantankerous little electrician." But in *The Tempter*, Heaviside, as the character Cedric Woodbury, is now described as "a cranky old codger with a tongue like a black-snake whip."

One of the reasons historical fiction is so interesting is that it must be based on fact. Unlike pure fiction, in which anything can happen (as long as it *could* happen), historical fiction requires that not only could it happen but that it did happen—at least in part. But just how factual must historical fiction be? Therein lies the rub—and the interest.

We like to think that all sentences appearing in, say, the *OTB* are true, but in historical fiction the verity of any given sentence can be suspect. This situation creates tension, and tension creates interest. Enough literary theory—what about Wiener's novel?

In the novel Pupin becomes Diego Dominguez, Campbell becomes Watman, AT&T becomes the Williams and Albright Company and the loading coil becomes a feedback control device. The novel, of course, allows Wiener to say and imply many things about Heaviside, Pupin and Campbell that he could not do in real life. But Wiener comes down pretty hard on Pupin both in real life and in the novel. In *Invention* he describes Pupin's moral position as untenable, and says that as a result Pupin's autobiography can be interpreted as a "cry from Hell." In *The*

*Tempter*, Wiener says of Pupin (Diego Dominguez), "At the cost of his soul, he had accepted the wealth and power secured to him by the modern magic of science... In fifty years or even in twenty-five he would become one of those false heroes of whose exploits history is full..."

So how much of Wiener's novel are we willing to believe is historical fact? And just who did invent the long distance telephone line loading coil—Pupin? Heaviside? Campbell? You can read any or all of the publications listed here in the reference section and still not know, but you'll be certain to have an opinion.

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
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## ONE MAN'S IMPRESSIONS, continued from page 18

were a much higher amount. There were also a larger number of items that were passed because they didn't reach the reserve price. In most cases I thought the reserve prices were reasonable.

The book fair inside the hotel ran for the entire four days. One book dealer told me his sales were very good and he was happy with the result.

The main speaker on the Stromberg-Carlson conference theme was to have been Lud Sibley. But while driving east from Oregon, Lud and his wife, Marilyn, had a serious accident somewhere around Chicago. By the end of the meet we learned that they were both out of intensive care. We are praying for the best for you Lud and Mar-

ilyn. The Stromberg Carlson presentation was replaced by a video tape narrated by Bruce Kelley. It was the history of WHAM, the first broadcast station in Rochester. The station was owned and operated by Stromberg Carlson. The showing was very well attended.

I am very sad to have to tell you that my brother, Ted died last January 12th. He and I were both in different hospitals then, and talking with each other every day by telephone up until the time he died. I will sorely miss him. At the time I was in the Cleveland clinic for my second heart valve replacement and am so glad I was well enough to attend the conference this year. 

## ON THE AIR FROM THE USS ALBACORE'S RADIO ROOM

The first time you see the Diesel-electric *USS Albacore*, you know it's not an ordinary submarine. Its hydrodynamic blimp-like hull looks more like the body of its namesake, or a huge black dolphin or whale. From the outset it was considered ahead of its time, setting the pace for nuclear submarine designs that came later.

Completed in 1953, it served for two decades as a high-speed U.S. Navy research sub, never carrying torpedoes or heavy armament. Over the years of its service, it was modified numerous times in an ongoing evolutionary effort to increase its underwater performance.

The ship's daunting 30-knot-plus speed, and

its propensity to heel sharply as it turned (the crew referred to this as a "snap roll"), was apparently upsetting to many a communications operator confined to the *Albacore's* tiny radio room. "There were people aboard, particularly in the electronics spaces, that were scared to death at some of the maneuvers," recalls Lieutenant Ted Davis, one of the boat's pilots [1].

### *The Ham Radio Focus*

The restoration of the radio room equipment began when the Port City Amateur Radio Club (PCARC) of Portsmouth, New Hampshire obtained permission to operate from the sub during the annual "Submarines On The Air" Amateur



Now a museum, U.S.S. Albacore rests in her concrete cradle at Portsmouth, NH.

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Radio event in the spring of 2000. The Submarine Veterans Amateur Radio Association hosts this occasion.

James B. Sergeant, director-at-large of the Historic Naval Ships Association, gave club president Paul Schreier (AA1MI) permission to temporarily install modern ham radio gear and antennas—and the sub was on the air.

Subsequently, Schreier approached me and two other club members (W1PIE, David Sawyer and ex-submariner N1LBG, Ron Gallant) to determine if the *Albacore*'s original equipment could be restored, and possibly be used for future ham radio operations.

At first, things looked dismal. The radio room's main high-frequency receiver, a General Dynamics R-1051, was badly damaged. Its front panel was missing knobs, some of its frequency encoder shafts were sheared off, and a number of switches and controls were bent or destroyed.

The remainder of the equipment in the radio room was unscathed. Nonetheless, with the exception of the ship's HF antenna tuner (feeding coaxial lines for whip antennas mounted on the conning tower, or sail) the remainder of the

equipment wasn't known to be functioning.

My inclination was to begin by restoring the ship's R-1051 receiver, a 1960s state-of-the-art multiple-conversion superhet. It's notable for its discrete-component frequency synthesizer and motorized band-switching, and was designed to replace the R-390 Series of tube-type receivers that were widely used by both Army and Navy. (An early *Albacore* wiring diagram shows an R-390A). The R-1051, and the companion RT-618 transceiver, both cover 2 MHz to 30 MHz, with separate diode-switched IF filters in the receiver sections for upper or lower sideband, CW, and compatible AM. The R-1051 receiver permits independent sideband operation, dividing detected audio into two completely independent and separate audio-output channels.

These radios were designed to be relatively easy to use, with fewer knobs and controls than the predecessor R-390 and R-390A receivers. An operator would be able to select an exact frequency or channel on an R-1051 by turning individual decade knobs. The selected frequency is indicated by backlit numerals above each of five selector knobs, two for selection of mega-



PCARC club member Ron Gallant hauls the RT-618 transceiver and companion AM-3007 amplifier out of the sub. Combined weight of the two sets is nearly 200 pounds.

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cycles and three for kilocycles.

The R-1051 relies on an internal frequency source for its phase-locked-loop synthesizer reference (an external source is an option; it wasn't used on the *Albacore*). One of the design goals for General Dynamics apparently was to achieve superior frequency stability over the predecessor R-390 Series receivers. The improved stability would enable reception of low speed (50 and 75 baud) encrypted transmissions using multi-tone multiplexed FSK, where stability within 3 cycles was required.

### *For Better Or For Worse?*

In some ways, the design of these sets seems inferior to that of the R-390 Series receivers. In my experience, the latter are much easier to service. The R-1051, although highly modularized, is nearly impossible to troubleshoot at the component level. The components are almost inaccessible. Establishing operating voltages, logic levels, signal injection, and probing was a bothersome task for modules removed from the main chassis. At one point, while working on an IF strip, I had nearly a dozen test leads attached to the module.

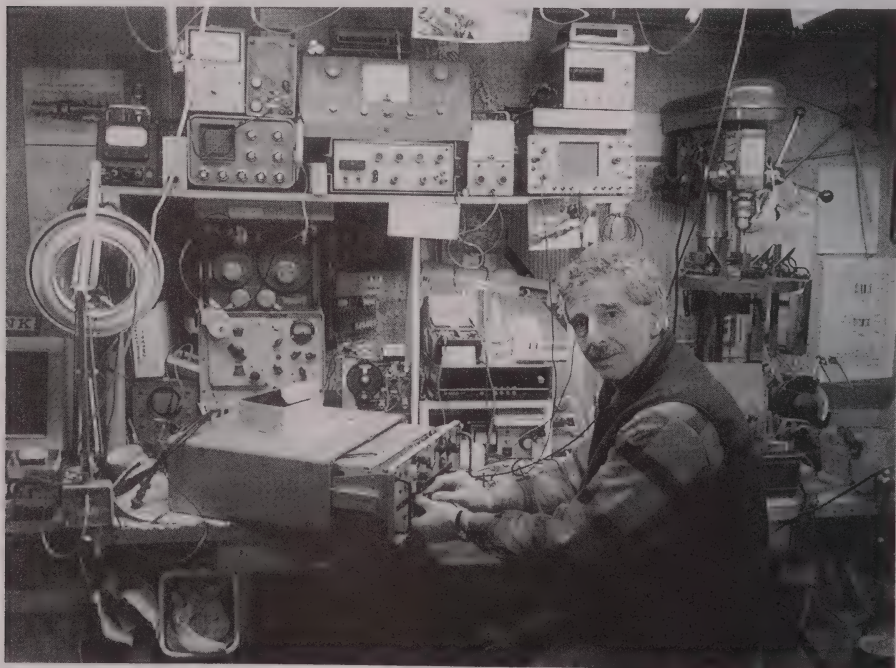
The service manuals for these sets indicate that the Navy intended that the modules be

swapped for known good ones when problems arose. Defective modules would be serviced later shoreside. The verbiage in the manuals suggests that depot-level facilities were equipped with special fixtures to accommodate the modules. Possibly the difficulty in servicing these sets is what prompted Lt. Commander William P. St. Lawrence to curse the *Albacore's* radio equipment as "the worst in the Navy." [2]

### *The Use Of Vacuum Tubes*

Both the R-1051 receiver and the RT-618 transceiver use a pair of tubes in the receiver front-ends. These tubes are in the first and second RF amplifiers. The first RF stage is a 6BZ5 pentode; the second RF amplifier uses another pentode, a 6AN5WA. Almost all of the remainder of these set's stages, both digital and RF/IF, are configured with germanium bipolar junction transistors.

The tube front-ends provide re-radiation isolation from the remainder of the set, a consideration that was likely a response to the Navy's need for receivers that wouldn't emit any detectable RF of their own that an enemy navigator could use to home in on. Moreover, the tubes provide a measure of protection from a nuclear explosion's electromagnetic pulse. EMP was a



*Author Alex Mendelsohn works over some of Albacore's gear at his bench.*



widespread Cold War consideration. Gilding the lily, the R-1051 also includes a separate over-voltage protection circuit ahead of its RF amplifier. It uses both avalanche diodes and a relay to protect the front-end.

After a few winter months on my workbench, during which time bent pins were straightened, potentiometers replaced, operating voltages restored, and shaft assemblies re-machined and installed, the receiver was ready for reinstallation on the submarine. My attention then turned to the restoration of the kindred RT-618 transmitter, along with its AM-3007/URT amplifier, a separate deck that delivers up to 50 watts of RF output.

During the refurbishment, I was surprised to find that the receiver section of the RT-618, although almost identical to the R-1051s—and primarily based on germanium semiconductors—also sported a single 2N491A field effect transistor (FET). Even more surprising was the discovery of a 3N140 dual-gate FET. Both are used as high input-impedance oscillator buffers.

This finding indicates that the set was truly leading-edge technology for its day. According to an article that appeared in the March 1961 issue of *Electronic Design* magazine, field effect transistors debuted commercially in that year, with the first devices available from Crystals, a Cambridge, Massachusetts firm.

I was unable to determine the origin of the FET devices in the *Albacore*'s radios. How much earlier General Dynamics had access to FET technology is a subject of conjecture. However, it is likely that the set's designers had access to such technology prior to its availability in the commercial world.

## Ready For Action

By the spring of 2001, the PCARC restoration team was ready to activate the radio room for the 2001 "Submarines On The Air" event. In operation, the R-1051 gives a good account of itself. Although the rotating turret assembly is constructed with silver-plated phosphor-bronze contacts, it occasionally acts up, but dirty contacts aside, the receiver is sensitive and stable. For its part, the RT-618 exciter delivers about 1 W of RF, enough to drive the AM-3007 amplifier to rated output power.

In an effort to achieve better-sounding modulation than that of the telephone-type carbon handset used with the RT-618, David Sawyer suggested that I build an impedance-matching circuit based on a FET-input op-amp. The output of an Astatic D-104 lollipop microphone feeds the op-amp differentially, and the op-amp's very



*Payoff time! With the RT-618 and AM-3007 re-installed in Albacore's radio room, Alex establishes a 20-minute CW contact with UA1CJX in St. Petersburg, Russia.*

low-impedance output drives the microphone input transformer in the RT-618 quite well. (Note: readers interested in this circuit can request a copy of the schematic from the author).

Mirroring the receiver, the AM-3007 amplifier section uses a concatenated pair of output tubes. An 8223 pentode drives a dual-tetrode 8116, with both tetrodes in parallel operating Class A for SSB and AM. That explains the set's huge cast heatsink! For CW, the PA operates Class C.

Significantly, a spare 8116 proved nearly impossible to find. Although calls went out far and wide for one, the best we could determine was that the tube would cost about \$600 for a replacement—if one could be located. As such, the PCARC restoration team has decided to limit use of the RT-1618/AM-3007, placing it on the ham bands for special occasions only, relying instead on modern ham radio transceivers for most Amateur Radio events.

On the weekend of April 28th, the PCARC went on the air with the sub's original equipment, under the club callsign W1WQM. Hopefully, in the near future, the club will use the call-  
*(continued on page 39)*

# GLIMPSES OF THE MUCHOW AUCTION SCENE

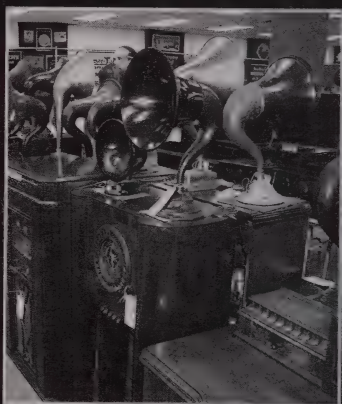
(See "From the Editor" for more information.)



Prototype of "Z-Nith" receiver developed by Chicago Radio Laboratories, predecessor of Zenith Radio Corporation.



General view of the auction scene.

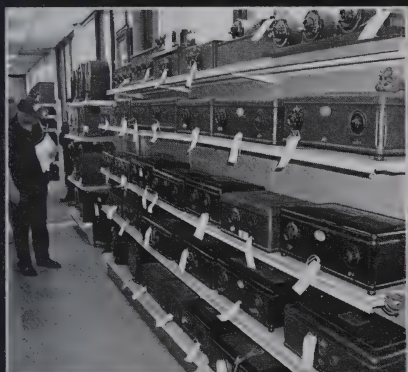


Elegant consoles serve as display stands for an exotic collection of horn speakers.



A small sampling of the advertising and display items being offered.

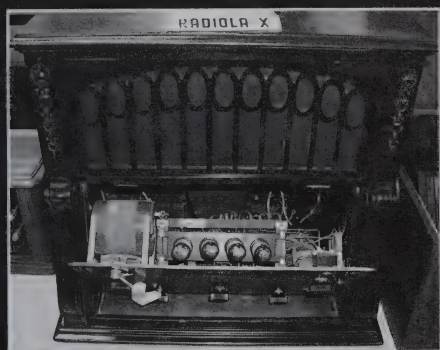




*The auction lots included as complete a group of Atwater Kent box and breadboard sets as has ever appeared under one roof.*



*A collection of plated chassis gleams under the auction room lights.*



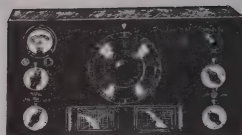
*Radiola X with panel tilted forward to reveal set's fine condition and complete tube complement.*

*A interesting group of artifacts awaits a turn on the block.*



# THE COMMUNICATIONS RECEIVER

EDITED BY **WILLIAM FIZETTE, W2DGB**, RR 1, BOX 55, HENRYVILLE, PA 18332  
PLEASE INCLUDE SASE FOR REPLY.



## Fire and Flood...Fact or Fiction?

In perusing the National Company photo albums which Alan Douglas so fortuitously rescued from a dumpster, I ran across the picture of the fire-damaged HRO shown here. It struck a chord, and sure enough, in searching through the National advertising in *QST*, the same photo was discovered in the August 1942 issue. It depicts an HRO communications receiver with significant fire damage, and was accompanied by a two-paragraph story telling how much punishment some of their sets could absorb and still function.

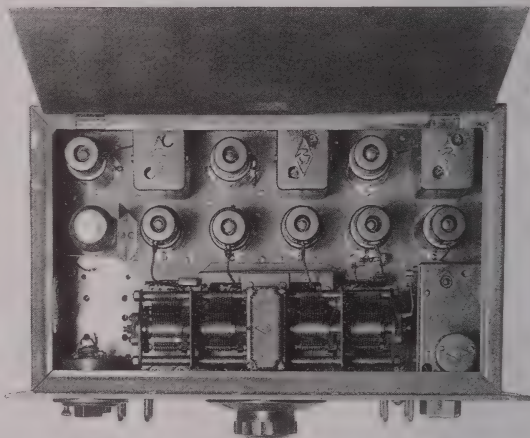
The tale goes something like this: this was one of four receivers in a building damaged by fire. The intense heat distorted the exposed Bakelite parts and damaged the paint. Two of the four receivers worked normally except for noisy tuning, which was corrected by cleaning soot from the capacitor rotor contacts. The other two required minor bench repair and then they worked normally also.

Further, the ad tells of two HROs which were accidentally dropped into a harbor while being loaded aboard a ship. These were in due course returned to National and tested, where they showed satisfactory performance after minor repairs, even though salt water was still inside the coils when they were received at the factory in Malden, Mass.

A careful inspection of the original photo reveals that the receiver was or had been rack mounted, that some but not all of the paint was blistered from the heat, and that the bakelite knobs were indeed fire-damaged with the metal parts showing residual soot. Parts of the fragile



*Fire-damaged set used in 1942 ad stressing HRO's reliability.*



*Inside the fire-damaged set. Not used in the "reliability" ad, this photo reveals damage to be only superficial.*

celluloid and paper charts on the coil fronts survived, as did the cloth-covered power cord. The top-view photo (unpublished) of the inside showed little or no fire damage, with the exception of some soot.

Despite the title above (which I used to get your attention) let us assume that this is a valid



situation and that truth-in-advertising prevailed. In that case, these receivers were very lucky indeed, as both fire and salt water can do considerable damage to delicate communications gear. One gets the impression that the fire flashed against the front of the set just long enough to cause the dramatic but superficial damage shown and then quickly receded. In the case of the sets dunked in the salt water, some time did elapse before they were tested by National, but apparently not enough for the long-term corrosion effects to appear.

The message here, however, was that National receivers were tough and could absorb punishment and still keep working. This was obviously important to the times, early in WWII, when product reliability under severe and adverse conditions was a necessity. That they were solid is verified by the writer, who has seen one restoration of an HRO salvaged from a town dump in Massachusetts, and another which had been stored in a leaking tropical shed, long enough for rust and corrosion to appear.

Of assistance here was the fundamental design of the HRO, that is, the extensive shielding of delicate coils, coupled with the use of heavy-duty components in general. The receiver pictured was one that started out as a table set, but had a rack panel added, giving an extra layer of steel protection.

So what do you do if you come across an abused receiver (or transmitter, or other piece of gear)? If there is no sheet metal distortion, and if the heat or water exposure was not too prolonged, and the insides are not damaged beyond any hope of repair, the set can most likely be brought back and made to work. It may be simply a matter of cleaning and repainting to restore the appearance, and then methodically following a conventional restoration procedure.

The questions that need to be answered are...is it a quality product, and is it worth the time? In the case of these irreplaceable sets from another era, it is hoped that they will not be simply discarded, but will be given some care by those who recognize their historical significance. ☐

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### **U.S.S. ALBACORE**, continued from page 35

sign NM1JY, after the *Albacore*'s original NMJY Navy call.

Firing up the RT-618 and amplifier on 15 meters, I had a nice 20-minute CW contact with UA1CJX, Sergei in St. Petersburg, Russia. As we conversed, I imagined that it wasn't too long ago that this very rig was probably being used by an NSA/CIA "spook" to eavesdrop on Soviet conversations. In any case, UA1CJX expressed surprise to hear WIWQM from an American submarine! KITCI reported that the RT-618 had a "distinctive, but pleasing" CW note. "Don't change anything," said Art. "It's unique."

### **Looking To The Future**

Much work remains to be done to get the *Albacore*'s other equipment tested and operational again. The six-foot high AN/URC-32 Radio Set, built by Collins Radio, is the next candidate for restoration. It's an impressive 19-in. rack-mounted array of gear that includes equipment for receiving and transmitting over the 2 MHz to 30 MHz range using upper-, lower-, or independent-sideband modulation. It's also capable of CW and compatible AM. Its two-stage RF amplifier deck accepts a 150 mW driver signal and develops a peak-envelope power output of 500 watts.

The *Albacore*'s ELF/VLF AN/WRR-3A Receiving Set also intrigues me. Its coverage ex-

tends from 600 kHz down to a very low 14 kHz. According to Jim Sergeant, this set was used to intercept alert tones and slow-speed data transmissions, while the *Albacore* was submerged.

The sub's UHF short-range communications equipment is fascinating as well. The AN/URR-13 Radio Receiving Set and companion CAY-52373A Radio Transmitter cover 220 MHz through 400 MHz. This equipment would also lend itself to operation in the Amateur Radio bands, albeit for local ham radio contacts only.

If you're in northern coastal New England, plan on visiting the *USS Albacore*. It's open weekdays and weekends for self-guided walk-through tours. Call the Port of Portsmouth Maritime Museum at (603) 436-3680 for more information. If you have questions, comments, corrections, or additional information about the *USS Albacore*'s radio room and communications systems, please contact the author or the Port City Amateur Radio Club. ☐

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### **REFERENCES**

- [1] Robert P. Largess and James L. Mandelblatt, *U.S.S. Albacore, Forerunner of the Future*, 1999, The Portsmouth Marine Society, ISBN 0915819-24-4, p.66.
- [2] *Ibid.*, p. 105.

# THE MARCONI WIRELESS INSTALLATION IN THE R.M.S. TITANIC

## — Part 1 —

*Author Stephenson briefed Director James Cameron on the layout and equipment of Titanic's Marconi rooms prior to Cameron's departure to film the documentary Ghosts of the Abyss at the wreck site. It has just been learned that the expedition has been able to videotape details of the Marconi rooms, and these will be discussed in Part 2, which will appear in our next issue. This two-part article is intended to be a summary of the much longer monograph on Titanic's wireless installation, which is tentatively scheduled for publication in the next edition of The AWA Review.—mfe*

### Introduction

In the early morning hours of 15 April 1912, a high-pitched musical tone sang out for hundreds of miles across the North Atlantic in a desperate plea for help. The White Star liner R.M.S. Titanic had struck an iceberg, and her 5-kW Marconi installation was signalling her death knell.

Over the years, Titanic's Marconi wireless set and her steadfast operators have attracted a good deal of public attention. Titanic as well as wireless historians have offered technical descriptions of the equipment and its capabilities in various publications throughout the years. Unfortunately, much of the previous research drew too heavily on contemporary press releases that encapsulated the details of the standard 1.5-kW marine set installed at that time in most ships serviced by the Marconi's Wireless Telegraph Company, Ltd. (hereafter referred to as the Marconi Company).

The 1.5-kW set was, in fact, originally intended for the two sister ships, Olympic and Titanic, before their completion. As it turned out, though, the technology advanced so quickly that Olympic would be the first merchant vessel serviced by the Marconi Co. to receive a 5-kW plain spark installation, just prior to her maiden voyage

in June, 1911. Titanic would receive the additional benefit of a synchronous rotary spark discharger the following year. This change in installation would largely escape public notice.

Titanic's wireless set had a nominal working range of 250 nautical miles, but signalling more distant stations was possible. At night, ranges of up to 2,000 miles were attained with sets of similar architecture. The use of the "T" type aerial afforded greater power and sensitivity both fore and aft, so optimised performance could be expected when the ship was pointed either toward or away from a distant station.

The location of the wireless suite aboard the Olympic-class ships causes some confusion to historians because of constant evolution in design. The original configuration for the class, as used initially on the lead ship Olympic, put the wireless equipment on Boat Deck inside the Officers' Quarters complex against the port side of the deckhouse. Most plans and photographs issued to the press reflect this early configuration. Between the time that Olympic and Titanic were fitted out, however, the owners decided to relocate the wireless suite of the latter ship inboard on the centreline of the same deck (taking the space occupied on Olympic by the Officers' Smoke Room and Pantry) in order to free valuable windows for use by First Class staterooms. Whereas Olympic's Marconi Room had a window on the port bulkhead directly above the operator's desk, Titanic's would instead have a 6-pane skylight overhead. Later in Olympic's career, the same need to maximise window space for passenger accommodations would dictate a similar move of her wireless suite to centreline.

On board Titanic, the wireless equipment was housed in a series of interconnecting rooms—the sound-proof "Silent Room," in which noisy transmitting equipment was located; the Marconi Room, an office in which contained the operators' work stations, manipulation keys, and re-





*Titanic in her berth at Southampton, England. From the Harland and Wolff photo archive.*

ceiving equipment; and the Bed Room, which contained the operators' berthing.

The wireless set was operated and cared for by Marconi Company employees, who were by routine assigned to *Titanic* for the duration of one voyage and, therefore, not considered part of the normal crew. The uniforms worn by the two Marconi operators aboard *Titanic* were made distinguishable by Marconi emblems on the buttons, sleeves, and cap. Marconi employees were not directly responsible to any of the ship's crew, having only certain responsibilities to the ship's Master. Most of their time was spent within the Marconi suite, with the exception of meals, which were taken in the dining saloon reserved jointly for Marconi and Postal employees on C Deck.

### ***Details of the Wireless Installation***

The Marconi wireless equipment set consisted of both transmitting and receiving apparatus. The transmitting apparatus (Fig. 1) consisted of five distinct circuits that converted direct current from the ship's electrical mains into regulated, high-power, radio-frequency oscillations that were then transmitted into the atmosphere by way of the ship's aerial. Much of this equipment was located in the Silent Room.

The receiving apparatus, located on or adjacent to the aft-facing operators' desk in the Marconi Room, was connected into a single circuit that converted radio-frequent oscillations collected by the aerial into audible signals that could be heard by the operator. An auxiliary transmitting set, also located in the Marconi Room and capable of producing a plain spark in the event of a casualty to the main transmitting set, was also provided.

### ***Transmitting Set***

The Direct-Current transmitting circuit carried the 100-volt direct current (DC) from the ship's lighting circuit via a local electrical distribution box to the main switch for the Marconi equipment. A motor-generator, rated for a 5-kW output and consisting of a DC motor directly coupled to an alternator on a common bedplate, converted the supplied DC into alternating current (AC).

Two field regulators—one in series with the motor, the other in series with the alternator—allowed the operator to adjust the frequency of the alternator and the voltage across the armature, thereby achieving resonance, which was essential for a properly quenched spark. Four graphite sticks absorbed any oscillations or spikes in po-

tential, thereby protecting the windings of the motor and alternator.

The Low-Frequency primary circuit carried the low-potential AC generated by the alternator to the primary winding of the transformer. A double-panel switchboard allowed for control and monitoring of current flow through both the motor windings (DC) and armature (AC) as well as supplying fuse protection for the primary circuit. A shaded pilot lamp on each switchboard illuminated whenever power was being supplied to the respective board.

An adjustable spiral inductance was used in conjunction with the speed of the motor to provide resonance in the circuit by bringing both current and voltage into phase. A closed-core, step-up transformer raised the voltage of the AC to a level, normally 20,000 volts, required to charge the main condenser. A manipulating key on the operators' desk activated a double electromagnetic key in the primary circuit, allowing the operator to interrupt the current in the primary circuit at intervals corresponding to the dots and dashes of the Morse code.

The High Tension circuit carried the high voltage current stepped up by the transformer secondary to the condenser. Two air-core "choking" coils protected the windings of the transformer secondary from any high-frequency oscillating discharge currents flowing back from the condenser. The four cells of the main condenser were of the "double plate, whole plate" type and controlled in configuration by a Swiss commutator mounted above the condenser tanks.

The condenser stored the high-voltage charge until ordered to discharge it by the operator's closing of the manipulating key. To create the normal 600-metre (500-kHz) "long" wave, the cells were configured in parallel. Placing the cells in series alleviated the need for a separate condenser, as found in other marine wireless sets of the period, to transmit the 300-metre (1000-kHz) "short" wave.

The High Frequency Primary or Closed Os-



*Photograph of Olympic's Marconi room, taken during her maiden voyage in June, 1911.*



*This double exposure is the sole surviving photograph of Titanic's Marconi room, taken during her maiden voyage in April, 1912.*

cillating circuit set up an oscillating current of high potential for transmission. A spark gap in the circuit performed the following functions: 1) It kept the circuit idle until the condenser fully charged; 2) it then allowed the high-potential current to discharge in the form of a spark, thereby creating a radio-frequency oscillation; and 3) it "quenched the spark" by returning the gap in the circuit to its non-conductive state.

The spark gap used in *Titanic* was of the synchronous rotary type, which was essentially a metal disc studded with discharge electrodes that was keyed and mounted on the shaft of the alternator. The disc spun past two stationary electrodes that were connected in series with the closed oscillation circuit. Receiving operators could easily distinguish the high-pitched musical

*(continued on page 46)*



# KEY AND TELEGRAPH



EDITED BY **JOHN CASALE**, W2NI, 3 PICKERING LN., TROY, NY 12180

PLEASE INCLUDE SASE FOR REPLY.

## The Telegraph Instrument Factory of John Dean Caton

*The May, 2001 issue of this column, "The Vail Register," was correctly credited to John Casale in the Table of Contents, but accidentally and incorrectly credited to Roger Reinke, John's predecessor as column editor, on the article itself. John was definitely the sole author of this remarkable piece.—mfe*

One of the earliest and most respected telegraph instrument manufactories of the 19th century was the Caton Telegraph Instrument Shop at Ottawa, Illinois. This shop supplied the instrument needs of many mid-west telegraph offices and eventually evolved a firm that became part of the Western Electric Company. The shop's beginnings are best understood by following the early life of its founder, John Dean Caton, to see what brought him to Ottawa and subsequently into the telegraph business.

Caton was born in Monroe, New York just north of New York City, in 1812. At age three his father died and his mother moved her four children to a farm owned by her brother in central New York near Utica. John attended district schools year round until he was 11, later spending his summers working on farms to help support the family.

When he was 16, he entered the Academy at Utica, and in one year had progressed so rapidly that his instructors advised him that he was qualified to teach at one of the area district schools. While teaching, he continued his own studies and at 18 decided to pursue a law career, studying and working at a law firm in Utica. Within three years he had completed his fundamental law studies and decided to relocate to the "far west" to start up a law practice in Chicago.

When Caton arrived in Chicago in 1833, he

later said, there were no streets, except those shown on paper, and only 200 residents. Pine woods bordered the lake north of the river and the east sides of both branches of the river were clothed with forests of dense shrubbery.

The young man was one of the first lawyers to start a practice in Chicago, and the practice grew so rapidly that by 1838 the heavy work load began to affect his health. His doctor advised

him that he could not live unless he adopted a more physically active life. Returning to his roots, he went to work on a farm in Ottawa (located about 75 miles southwest of Chicago), while doing part time legal work in neighboring counties.

By 1842 he had regained his health, become a full-time lawyer again, and moved permanently to Ottawa. Later that year, a significant change took place in his life; Judge Ford, of the Supreme Court of Illinois, was elected governor and the 30 year old Caton was appointed as his successor.

*John Dean Caton*

During his 22 year career on the Supreme Court bench, Judge Caton had many acquaintances and business interests. In 1849 two of his Ottawa friends were attempting to assist Henry O'Riley of Rochester N.Y. who, operating under a contract with the Morse patents, was bringing to the first telegraph line into the state of Illinois from St. Louis.

Caton was asked to represent these friends in Peoria, IL at an organizational meeting of a new telegraph company. The Illinois and Mississippi Telegraph Company was formed at this meeting and Caton, who chaired the meeting, was elected one of its directors. Like many of the new directors, Caton knew nothing about the telegraph, so they hired a superintendent who knew slightly



more than they did to run the company.

For the next three years Judge Caton spent much of his spare time learning everything he could about the telegraph. He became proficient in the art of telegraphy and was able to send and receive his own messages. (At that time mechanical "registers" were exclusively used for receiving.) But the three-year-old company was in bad shape and declining rapidly. Due to poor construction, half the lines were out of service at any given time. Offices did not have the funds to pay expenses and could not secure even enough credit to purchase battery acid from local druggists.

At this point, the other directors wanted to abandon the operation and sell off any assets. Caton, however, remained confident in the long term prospects of the telegraph and came up with a plan to save the company. He proposed to modify the charter so that under certain dire conditions the company could levy a tax of \$2.50 on all shares of stock. If stockholders did not pay after a certain period of time, the company would be authorized in a special legal proceed-

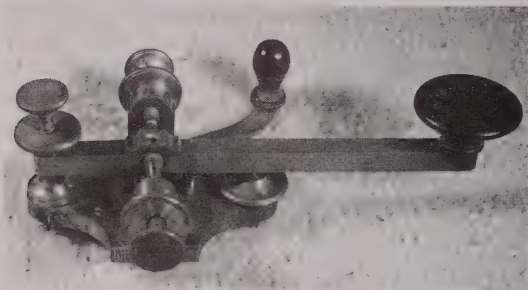
ing (court of chancery) to sell off their delinquent shares in a public auction at \$2.50 a share.

The plan was adopted by the board in June of 1852 under the condition that Caton would execute it and assume the presidency, which he reluctantly accepted. To pull all this off legally, Caton had the governor add a special "telegraph" amendment to a piece of legislation that was before the state legislature. He then argued his own position when the bill went to the Judiciary committee, who recommended its passage to the House.

The funds received from this plan were just enough to get the most important lines temporarily back into service. Caton had crews constantly patrolling and testing the lines, but the lines were still going down due to the premature rotting of the untreated hardwood poles. Still determined, he made the decision to rebuild the lines using cedar poles, even if it meant using his own savings and assets.

He traveled to the cedar swamps of Green Bay, Wisconsin, exploring the area by canoe with Chippewa guides, and arranged for a large quantity of poles to be cut and shipped to Chicago. Caton then negotiated contracts with the railroads to assist with the delivery and installation. Three long years later the integrity of the lines slowly improved, as did the balance sheets of the company. Considerable railroad expansion was also taking place in the mid-west at this time and Judge Caton, seeing an opportunity, purchased the rights to expand the telegraph into other areas of Illinois and into the states of Iowa and Minnesota. He started two additional telegraph companies on his own and contracted the railroads to build his new lines along their right of ways. These two companies grew to be larger than the original, but by 1856 all three were incorporated as the "Illinois and Mississippi."

With all this growth came the company's economic need to supply and repair its own instruments. The Caton Telegraph Instrument Shop, like the company itself, evolved from a small operation. In 1853 Caton set up a school for telegraphers in Ottawa. The facility also had an extensive library, laboratory, and workshop. The shop was equipped with a lathe, soldering apparatus, wire, and tools. Magnets were manufactured and rewound there,

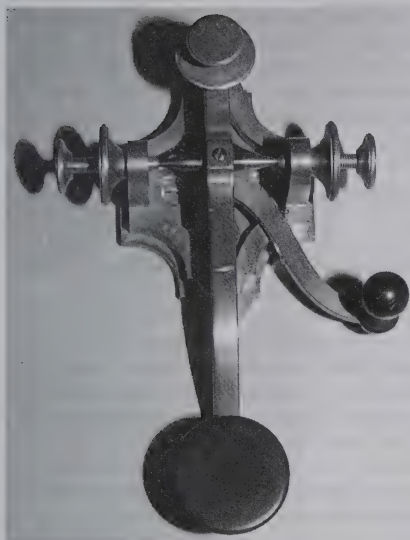


*Straight lever key marked "R. Henning Maker and W.U.Tel. Co."*



*A Caton pocket relay (key and sounder).*





*A Caton patterned key with their classic base, showing the "snapping" circuit closer.*

and any repairs and modifications needed for the company's instruments were performed.

A much larger operation evolved from this activity. Judge Caton, who had a reputation of selecting the right man for a job, hired machinist Robert Henning as shop superintendent. And although Caton normally involved himself in the smallest details of his company, he gave Henning carte blanche to build and run the facility as he saw fit. All the instruments that became well known during this era as the Caton, or Ottawa patterns, were of Henning's design.

The Caton shop was located a half mile from town by a track belonging to the Rock Island Railroad. A simple sign, "Telegraph Instrument Factory" stood atop a one-story 130' by 30' brick building. During the shop's prime, twenty-eight machinists were employed there, most of whom had instrument experience from other U.S. or European machine shops.

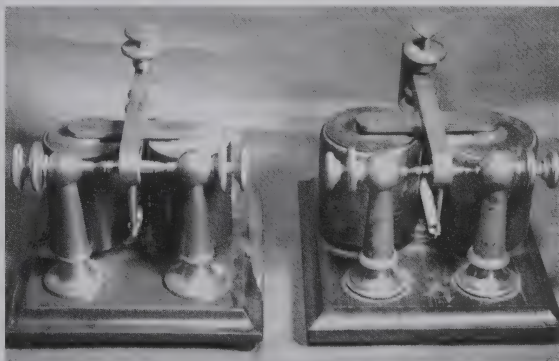
The shop had 18 lathes, one planer, one gear cutter, five insulating machines for covering magnet wire, and a full complement of tools for each machinist. The shop's machinery was belt-driven by a coal-fueled, steam-powered engine. It was once observed that the machinists there worked "without kid gloves" and "shoved their

files as though they had to earn their living." Fine examples of the workmanship at Ottawa are shown here in this article. Included is an interesting circuit-closer design that was popular among telegraphers and makers. It was called the spring, or "snapping" circuit closer. A small set of horizontally mounted key contacts were located on the circuit closer and on the key's lower contact assembly. The circuit closer, being spring assisted, would "snap" and stay in either the open or closed position.

In July of 1867, Judge Caton, in a complex lease and sale agreement, turned over the entire operation to Western Union and removed himself from the telegraph business. The instrument shop became Western Union's second largest manufactory. Robert Henning, being highly recommended by Judge Caton, continued as the superintendent at an annual salary of 2,100 dollars. The instruments that were once inscribed "Caton-Ottawa" were now marked like those of other Western Union shops at this time, indicating the shop's superintendent — "R. Henning Maker."

Western Union made improvements to the establishment, and in 1869 they started producing their own brass in a foundry located behind the main building. A typical month's production in the year 1870 was 70 keys and sounders, 60 relays, and 10 registers. The shop also produced cut-outs, lightning arresters, and switch boards, and continued to do instrument repair work.

In 1872, the Western Electric Manufacturing Co. was formed in Chicago. It combined the shop of Elisha Gray and Enos Barton with the Western Union Ottawa facility (Western Union maintaining a one-third interest). Previous to this, the relatively new Gray and Barton company was advertising that their Morse instru-




*Two Ottawa/Caton patterned sounders—R. Henning on left; Western Electric Mfg. on right.*

ments were of the "Caton" pattern. In fact, the firm's ads stated they had acquired some original castings from Ottawa. As late as 1875, The Western Electric Mfg. Co. was still advertising: "Our Morse instruments are of the Western Union, Ottawa or Caton style."

Throughout his telegraph years, Judge Caton continued to fulfill his judicial responsibilities; he became Chief Justice of the Supreme Court of Illinois in 1855 and again in 1857. He held the latter position until his retirement from the bench in 1864. A year after his retirement, he was called back to the Supreme Court by the Illinois Bar on the sad occasion of President Lincoln's assassination. He placed the Court's formal resolutions into record, and included his personal recollections of their longtime colleague in an eloquent speech to the full court. (Ottawa, incidentally, was the site of the first Lincoln-Douglas debate in 1858.)

The remainder of Judge Caton's retirement

years were spent traveling abroad and pursuing interests in literature and natural history. His life is a striking example of the fortitude and perseverance that was especially needed by pioneers in the early development of the telegraph industry. 

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## SOURCES

*The National Telegraph Review*, July 1853  
*The Telegrapher*, February and March, 1868,  
August, 1871, July, 1872  
*Journal of the Telegraph*, January 1875  
*Miscellanies*, John Dean Caton, 1880  
*John Dean Caton*, Robert Fergus, 1882  
*Executive Minutes of The Western Union Telegraph Co.*, Western Union Archives,  
N.M.A.H., Wash., DC

Instruments shown are from the Moreau, Reinke, and Casale collections.

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## TITANIC, continued from page 42

note emitted from a synchronous rotary discharger from the "Shhhh" sound emitted by a plain spark discharger.

A spiral inductance was included in the circuit to tune the oscillation frequency to the wavelength of the aerial circuit and a coupling transformer, commonly known as a "jigger," roughly coupled the closed oscillation and wave-radiating circuits together.


The Radiating, or Open, Oscillating circuit inductively transferred the high-voltage oscillating current from the closed circuit to one open to the aerial. The 325-metre fundamental wavelength of the aerial required an additional inductance to provide the additional functional electrical length needed to transmit the long wave. A small lamp in series with an adjustable inductance coil, shunted between the jigger and the ship's ground, provided a means for fine-tuning the circuit.

A protective brass terminal, connecting the oscillation and aerial circuits to earth by way of an air gap, protected the receiving apparatus from the high potential of the transmitting apparatus while also providing protection for the aerial against lightning. Marconi's use of this earth arrester alleviated the requirement for a separate changeover switch, commonly found in the sets manufactured by other wireless companies.

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## Receiving Set

The Receiving circuit detected electromagnetic energy exciting the aerial and converted it into audible signals for the operator to hear. A magnetic detector, commonly known as "Maggie," working in conjunction with a Marconi multiple tuner, replaced the less-efficient coherers of previous years. The detector was used to convert the received radio-frequency oscillations to electrical currents while the three distinct circuits of the tuner largely filtered out unwanted frequencies and atmospherics (known as "X"s).

The signals passed through a telephone condenser, which filtered out unwanted harmonics. The filtered electrical impulses acted on diaphragms in the head telephones, causing them to vibrate and thereby creating sounds that the operator could hear. A Marconi valve receiver was also provided as a back-up to the detector/tuner combination. A separate battery and charging switchboard were provided to supply the 6-volt power necessary to heat the filaments of the back-up receiver's Fleming valves. A two-way switch toggled the detector/tuner or the valve receiver into the receiving circuit. 

*To be concluded in Part 2—which will appear in the February, 2002 issue.*



## A STRUCTURED APPROACH TO FIXING UP THOSE NICE OLD RADIOS

### 7 — *Repairing a 1951 Personal Portable*

The last column in this series, in May, discussed the questions that you should ask yourself before you start actual bench work on a radio. Assuming that you have this little preliminary exercise behind you, and you have decided that you want to restore your subject radio to working condition, we will continue on with a case history of a set that came across my bench this summer. Perhaps some of this will be use to you.

Some notes about parts and tools are in order first. Two tools that I found to be very handy were of Radio Shack origin, but unfortunately are no longer available from them. The first is a 2x headband magnifier, which I find most helpful, along with a good light source, in examining components down inside a chassis. The other is

called a Signal Injector, and was sold under the Radio Shack Micronta label. A small battery-operated hand-held device, it is used to inject a test tone into the circuit to check stage performance. One simply clips the ground wire to the chassis, and then touches the probe to the speaker leads. If a tone is heard, work back up the stages until the tone stops. The bad stage is thus isolated.

Fortunately a cheap and easy substitute can be made at the bench. Using a low voltage AC source such as a filament transformer, clip a 0.01 mfd capacitor to one lead, and a probe wire to the other side of the capacitor. This will give a 60-cycle buzz/hum that can be used at least to check audio stages.

Another piece of information that I found of interest is that Radio Shack lists its product line on the web site [www.support.radioshack.com](http://www.support.radioshack.com). There I discovered that they sell high voltage capacitors, both electrolytic and bypass, not stocked in the stores. While some of the prices are high, they are there. Look it up. Don't forget that Antique Electronic Supply, at [www.tubesandmore.com](http://www.tubesandmore.com), also stocks capacitors and other parts to repair those old tube sets with high voltages.

#### **Case History: Repair of an RCA Victor B-411**

This cute little 1951-vintage vacuum tube personal portable was probably a moderately expensive item in the RCA Victor product lineup. It has a quality appearance (see photo) and the carrying case is leather, not plastic. It used two bat-

*(continued on page 50)*

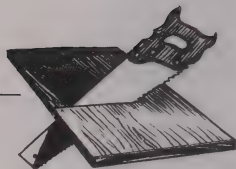


*The RCA Victor  
B-411. Photo courtesy  
Howard W. Sams & Co., Inc.*

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# BREADBOARDING

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PLEASE INCLUDE SASE FOR REPLY.



*Bring Historical Circuits to Life  
On Your Workbench!*

## Super-Regenerative Detectors

A guy named Mike Katzdorn runs a Web site dedicated to Edwin Armstrong. It's worth a long look.<sup>1</sup> There Mike tells how Armstrong's invention of the triode regenerative detector was a breakthrough in radio technology. You'll see original sketches and patent drawings of the great man's work. It established a landmark of sorts in radio law, too—Armstrong spent years in the courts fighting those who challenged that invention. He went on working, though, and while experimenting with hetero-

dyning, he invented what he called the super-regenerative detector. You can look up one of his first hookups in the 1940 ARRL Handbook<sup>2</sup>, together with a clear explanation of how it worked:

*The limit to which regenerative amplification can be carried is the point at which the tube starts to oscillate, because when oscillations commence, further regenerative amplification ceases. To overcome this limitation and give still greater amplification, the superregenerative circuit has been devised...similar to the ordinary type but with a...super-audible signal introduced in such a way as to vary the detector's operating point. Because the oscillations are constantly being interrupted, the signal can build up to relatively tremendous proportions, and the superregenerative detector therefore is extremely sensitive.*

The supersonic signal is called the quench frequency. The circuit of the super-regenerative detector, as given in the 1940 *Handbook*, is shown as Figure 1.

Varying the detector's operating point, eh? Somewhere in the bottom of the birdcage that was my engineering career, there lies a high-priced gizmo called a Parametric Amplifier; it gave gain when you fed it a "pump frequency" that sounds like the above quench frequency.

Did Armstrong invent the first Paramp? Let's see what super-regeneration can buy us in a simple breadboard detector.

If you'll go back to the May 2000 issue of *The OTB*, you'll find where we left one version of a regenerative detector, looking a lot like Figure 1 except for not having a quench input. I dragged out that breadboard and added a coupling transformer where Armstrong and the 1940 *Handbook* showed one. Now it looks

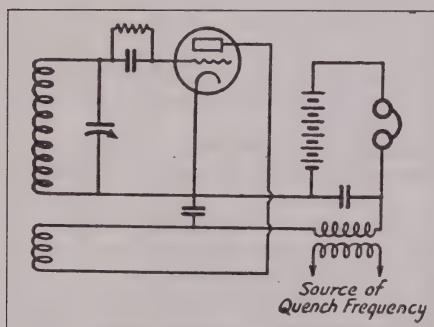


Fig. 1. Super-regen circuit from The Radio Amateur's Handbook, 1940 Edition.

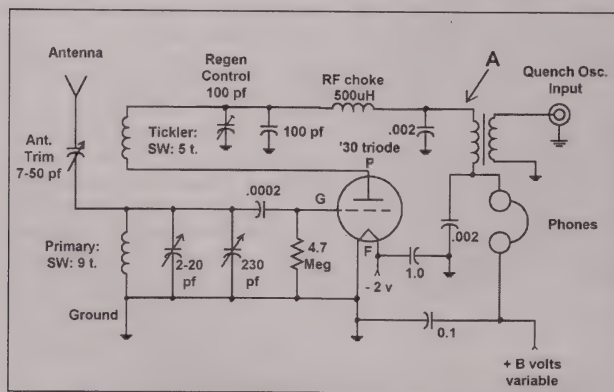


Fig. 2. My experimental super-regenerative circuit.



like Figure 2.

Note that I have done a couple of things: first I moved the Regen control to where it ought to be in the circuit and added another cap in parallel to improve the adjustment range. I put a ceramic bypass cap at the tube filament pin. And the added coupling transformer is a surplus 400 cycle power transformer that works fine at 20kHz and allows my bench signal generator to “pump” the B+ voltage up and down by as much as 30 volts. By varying the B+ supply and also the amount of the quench signal I can make the voltage at point “A” look like Figure 3.

My signal generator can make this waveform look like a sine, square, or triangle wave. I’d try them all. Since the Handbook mentions that the circuit works best at high frequencies, I used my shortwave plug-in coil and tested in the 25 meter band, where I have a little beacon transmitter in my mailbox (but that’s another column). Moving the B+ bus this much sure will change the operating point of the triode! In fact, the tube is supposed to go in and out of oscillation at the quench frequency rate. Here’s what I measured when I tuned in the low-power signal from my beeping beacon transmitter:

Circuit Configuration and Conditions		Recovered Audio Signal Amplitude (millivolts)
Straight triode detector		inaudible
Regenerative, best adjustments		50
Super-regenerative;	B+ = 20 volts, Quench = 20 volts p-p	500
Super-regenerative;	B+ = 25 volts, Quench = 20 volts p-p	950
Super-regenerative;	B+ = 30 volts, Quench = 20 volts p-p	1200
Super-regenerative;	B+ = 15 volts, Quench = 30 volts p-p	400
Super-regenerative;	B+ = 20 volts, Quench = 30 volts p-p	800
Super-regenerative;	B+ = 30 volts, Quench = 30 volts p-p	1500
Super-regenerative;	B+ = 35 volts, Quench = 30 volts p-p	1800
Quench Frequency 20 kHz — r.f. Signal Frequency 11475 kHz		

Holy smoke! A 10-fold increase in audio just to start with. I found that the higher the (average) B+ voltage, the higher the noise level in my phones. Also, centering the tuning seemed a little less critical as the quench amplitude increased. Using a square wave gave lots of noise—the sine wave was quieter indeed. Of course this thing is a full-time transmitter. There’s no way to adjust it just short of the re-

generative “plop.” The tube is going in and out of oscillation at the rate of 20 KHz. The audio is being sampled—chopped—whatever you want to call it, almost digitized as it were. But the ear averages it all out and it sounds pretty good. I tuned in many stations in the band, still with good selectivity.

If my results are anything like what Armstrong found, he must have danced a jig that day in 1922 when he was checking out this circuit. He reported this invention to the old IRE, and went about the process of locking up patent rights. Another inventor in England named John Bolitho had a patent that came close to Armstrong’s work, so Armstrong, who now had lawyers at his side, bought the rights and cemented his own position. From Katzdorn’s web site:

*RCA, having missed the opportunity to purchase Armstrong’s feed-back and superheterodyne patents...would not miss this one. On June 30, 1922, RCA paid Armstrong \$200,000 plus 60,000 shares of RCA stock (then worth \$217,500).*

Boy, those were the days! A decent car cost a thousand bucks, and you could set up a terrific business with \$400 K. These days an invention like that usually belongs to the company you work for. But Armstrong had one more big invention coming—FM—and he plowed the money into his laboratory like a good capitalist should.

If you want to know more about superregenerative circuits, take a look in a ham *handbook* of about this vintage. Later issues dismiss the design as obsolete and unsuitable for narrow-band signals. Me—I’m going to build another simple receiver, maybe with an RF stage to reduce the radi-

ated signal, and try to tune in some local FM broadcasts! I’ll let you know how it works in the next column.

Finally, I’ve been doing all the writing on this column since it started, and I’d be happy to be an actual editor for anyone else who wants to come up with a neat idea on breadboarding old-time circuits. Just bear in mind the goal—to help newcomers get interested in our hobby; so don’t

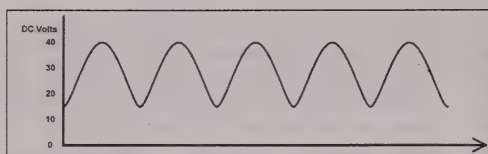


Fig. 3. Output waveform obtained at point "A" (see schematic). 1 millisecond sweep.

make your treatments too technical, please!

## In the Mail

In the last *Breadboarding* column I wrote about my over-the-top hookup for emission-testing power triodes. Right away in the mail came a note from Steve Dow up in Powell River, B.C. He suggests ".005/2000 volt micas across all

socket pins, right at the test socket. You will be testing bottles from time to time fully capable of operating at hundreds of MHzs. Booting them hard with long test leads could make them oscillate... You would be unknowingly dealing with a ½ kilowatt VHF power oscillator very close." Well said, Steve—you can get a nasty sting from that much RF, so I'll wire in them caps, and won't use ceramics, either! ☑

## REFERENCES

1. Mike Katzdorn's Armstrong Internet Site, <http://users.erols.com/oldradio>
2. *The Radio Amateur's Handbook*, 1940 Edition, the Rumford Press, pp 45-46.

## A STRUCTURED APPROACH, continued from page 47

teries, a D cell for the filaments, and a 67½-volt "B" battery. The approximate battery life for the D cell (intermittent service) was probably in the range of 7-10 hours; that of the B battery some 40-60 hours. There was no provision made for an alternative power source, such as the AC mains. Maximum power output was about 0.1 watt, not too much for a noisy room.

As you can see from the schematic diagram, the battery-only B-411 has a very simple circuit. Thus, it was not too difficult to work on.

This brings up an important point. If, on first inspection, you determine that you have essentially a piece of junk, ask yourself if the repair job will be worth the time and money required. Don't be afraid to say no; there are lots of radios out there.

The major problem involved in the repair/restoration of this particular set was locating a 67½-volt B battery. It had to have the correct terminals and had to fit precisely in the available space inside the cabinet. The filament battery was a standard D cell, so it posed no difficulty.

After considering the time-consuming option of actually rebuilding the battery (i.e., putting new cells inside the old cardboard case), it was decided to try to locate an exact replacement from a contemporary source. On calling around, a battery was found through the local outlet of Battery Warehouse. While not especially low-priced at \$30.69, a fresh one was available on order. Care-

ful measurement and checking indicated that it was an exact duplicate of the original RCA Type VS-016, and would fit nicely in the cabinet. The owner was willing to pay the tab, so we placed an order.

Inspection of the chassis indicated some abuse in the past. Batteries had been left inside the set for an extended period and had leaked acid, causing internal corrosion. A repair of the battery connections had been made, and appeared to be satisfactory. A check of the tubes showed that the filaments were still good, so power was applied to the set. In spite of the age of the components, and even considering that a number of them are probably "out-of-spec," the radio worked well enough that it was decided to leave it alone. And if ever needed, tubes are still available at a reasonable price.

The point of this exercise is that parts can be found, and older tube radios can be repaired and put into working order. Don't accept the first opinion that a particular component is not available.

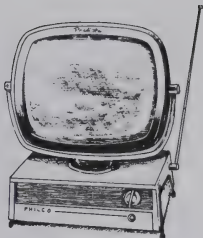
In the next issue we will proceed with some more case histories. In the meantime, if you have questions, I am available by e-mail at [W2DGB@enter.net](mailto:W2DGB@enter.net). I will do my best to answer you. ☑

*Service reference: Sam's Photofact Volume 132- Folder 12. Model B-411; Chassis RC-1098A.*



# TELEVISION

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## Restoring Later Pre-WWII Television Receivers

Collectable TV receivers fall into two major classifications: pre- and post-WWII. The pre-war sets are of a significantly earlier technology. And only a few thousand were made. Not only did WWII have a profound influence on the design of TV receivers, but in the early 40s, the standards and frequencies were changed. Thus, pre-war sets are quite different from sets built from 1946 onwards.

### About Pre-War Television Receivers

Pre-war sets can be dangerous. The high-voltage power supplies are typically of the "brute force" variety. This means that they utilize a conventional rectifier circuit, with step-up transformer and filter network, to provide the CRT accelerator voltage. That voltage can be as high as 8 to 10 thousand volts with sufficient current to kill.

I have heard rumors of servicemen being electrocuted while working on these sets, and it certainly can happen. The rectifier tube may not be

able to supply sufficient current but the filter capacitors sure can sure put out a powerful jolt. So take care to de-energize the HV and discharge the capacitors before working on the rest of the set. More modern sets often have much higher voltages, but without the current capacity.

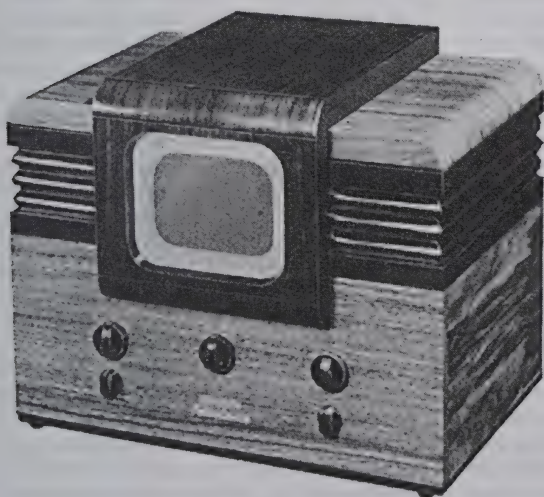
Pre-war sets are easier to work on. Invariably they used octal tubes, and sometimes even older types with fewer pins. The components are big, making the chassis large and convenient to operate on. The circuits are certainly simpler, without systems such as automatic gain control.

Parts are easy to obtain. There are some exceptions, of course, but generally the sets used parts which are found in many radios of the late 30s. This includes most of the tubes. Amazingly, important components such as picture tubes are often found to be still quite usable, whereas CRTs from the 50s sets sometimes failed rather soon. I'm sure the reason for this is the great care and expense that went into the early set manufacture.

The results are so satisfying! Getting a picture on a 60-plus-year-old TV is really a thrill, a bit like tuning in an early crystal set. One usually needs an signal booster to get sufficient input (these sets typically did not have an RF amplifier) but a VCR also works well. Tuning the picture so as to get the best sound is a bit tricky because the early sets had AM rather than FM circuits. But by using "slope detection" (tuning the receiver so that the slope of the response curve provides an audio signal proportional to the frequency of the input) enables the sound portion to be heard, albeit somewhat poorly.

### Approaches to Restoration

Begin by obtaining the schematic.



*The RCA TT-5, a 1939-era 5-inch tabletop.*

Usually the Riders manuals are satisfactory, but beware of circuit modifications. I have restored two TRK-12 (12" RCA console) receivers and had to choose which mod to use in the horizontal deflection area. Remember, these were the early days and the designers were trying to improve the sets as they were going down the assembly line!

Since pre-war TV transmissions were only 441 lines, the horizontal frequency was 30 x 441, or 13,230 Hz instead of the modern 525 lines (15,750 Hz). But the early sets always seem to be able to handle the modern signals.

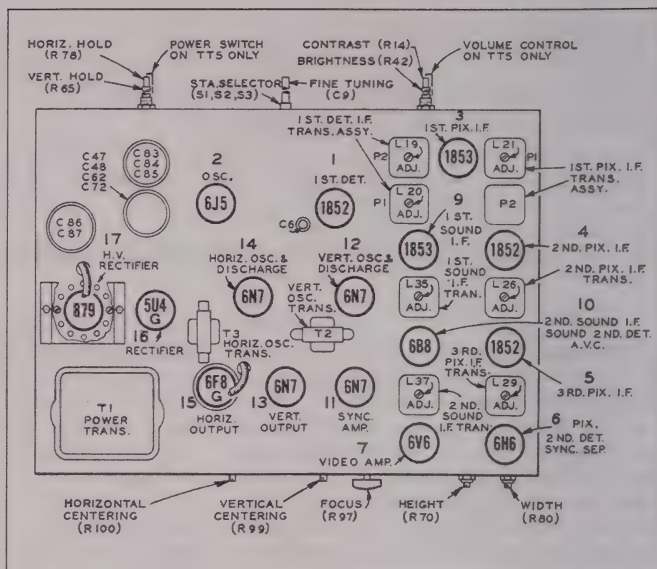
Before even buying one of these sets, check the power transformers. They can be rebuilt, but it's not cheap. And, of course, check the CRT filament! I restored one set and then had to locate a rare CRT. Not an easy job.

It would be wise to change out virtually all of the capacitors in the set. I generally don't change the micas and the HV filters, but it would not be a bad idea. Then I check the values of all the resistors and replace those more than 20% out of spec. All transformers should be resistance checked, including IF and RF coils. Plan to check all tubes on a reliable tube tester.

Although some sets have internal fuses, it is a very good idea to add a line fuse as a protection for the power transformer. Beware of sets that have had their tuners modified for the upper channels not available in 1939! These can be restored only with difficulty.

The early wiring was often of poor quality rubber and can flake off and cause difficult-to-find shorts, so beware. Plate or grid cap wires that go through holes in the chassis are often a source of trouble. In fact, any wires which penetrate the chassis should be carefully examined. Inter-chassis cables often have damaged wire insulation.

When powering up your antique, use a variac and leave the HV disconnected for the time being. Monitor the input current as you increase the line voltage up to 110. (Note that these early



*Parts layout of the RCA TT-5 video chassis provides insight into the tube types and circuitry used in pre-WWII TV receivers.*

sets were designed to operate on 110 volts not 120 or 125!) If you really want to be cautious, leave all the tubes out (except the rectifier) and check B+ voltages before inserting tubes.

Start out by checking the sound portion of the set; when that is going, you will be able to continue with a lot more confidence. The horizontal and vertical deflection circuits can be most easily checked with a scope, but you can also fire up the HV and watching the picture tube! Note that since the HV is supplied independently of the deflection, a spot can be burned in the center of the tube if the deflection circuits are not functioning. If there is no raster (line pattern), check for HV with a special probe. Incorrect bias on the CRT can also lead to a blank screen.

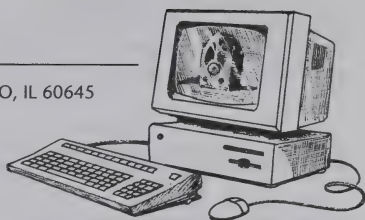
Some years ago, when I was on vacation at Lake Placid, NY, I visited Jack Davis (OTB TV column editor for a number of years) at his home there. When I arrived a local TV serviceman had just brought Jack's TT-5 (5" RCA 1939-era tabletop TV) back from the shop. They were unable to get it to work. Since HV was available, CRT bias seemed likely to be the problem.

A quick check showed that the grid was highly negative with respect to the cathode, cutting off the electron flow to the screen! An open resistor proved to be the culprit. Jack's reaction upon finally seeing a picture on his TT-5: "Now I can die happily!" He had been ill for some time and, in fact, died shortly thereafter. ☐



# ON THE INTERNET

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## Telephone & Telegraph on the Web

In the past few issues or so, I've compiled websites dealing with radio and television. This month, I would like to deal with land-based communications equipment; telephone and telegraph. While not strictly "wireless," telegraphic and telephonic communications were the "wired" forerunners of the more sophisticated spark and radio systems to come—which relied on the "aether" to propagate the signals. Also listed these offerings, for good measure, are sites for Morse, Bell and Edison.

### Antique Telephone Collectors Association (ATCA)

<http://www.atcaonline.com/atca2.html>

The Antique Telephone Collectors Association, or ACTA, is the largest telephone collectors organization in the world. Chartered in 1971 as a non-profit corporation by the state of Kansas, its over 1500 active members are located throughout the US, Canada, Europe and Australia.



### Alexander Graham Bell, The Inventor

<http://www.fitzgeraldstudio.com/html/bell/inventor.html>  
Early history, inventions, models and much about the inventor's varied life and work.

### Telephone Collectors International

<http://singingwires.org>

Telephone Collectors International is an organization of telephone collectors, hobbyists and historians who are helping to preserve the history of the telecommunications industry through the collection of telephones and related material.

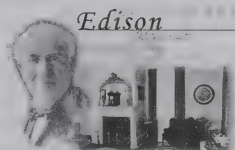


### Edison Birthplace Museum

<http://www.tomedison.org/>

Thomas Alva Edison Birthplace Museum, in Milan, Ohio, features a collection of rare Edison

nia, including examples of many of his early inventions, documents and family mementos.



### Telegraph Lore

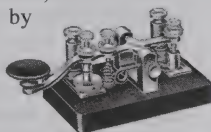
<http://www.faradic.net/~sgraven/index.shtml>

Telegraph Lore departments include History, Patents, Museums, Technology, and much more.

### Western Union Telegraph Company Collection

<http://www.si.edu/lemelson/dig/westernunion.html>

The Smithsonian Institution's Archives Center at the National Museum of American History. Contains History, Provenance, Correspondence, Patents by Buckingham, Edison, Gray, Morse, Phelps.



### The Telephone History Web Site

<http://www.atcaonline.com/phone/>

A wealth of information of antique phones, wiring diagrams, parts sources, collecting, and books covering all aspects of telephony.

### Samuel F. B. Morse

<http://memory.loc.gov/ammem/aththtml/mrshome.html>

The online version of the Samuel F. B. Morse Papers at the Library of Congress will offer access to the Manuscript Division collection of letterbooks, diaries, scrapbooks, clippings, and drawings of the inventor of the telegraph. This preview includes the paper tape containing the famous words chosen by Morse as the first telegraphic message, sent on May 24, 1844, "What hath God wrought?"

### The Telegraph Office

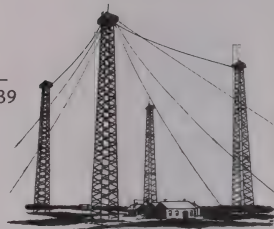
<http://fohnix.metronet.com/~nmcwen/ref.html>

A Tribute to Morse Telegraphy and Resource for Wire and Wireless Telegraph Key Collectors and Historians.

# BELOW 535

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PLEASE INCLUDE SASE FOR REPLY.



## Understanding Obsolete Units of Measure

**A**mateur or professional wireless historians alike learn from a variety of sources. The "technical" historian, especially, is always digging around at book fairs and used book shops for original material, be it from the popular press of the day, or the serious texts authored by revered professors from major academic institutions. The orphans of the surviving older literature seem to be the sparsely illustrated engineering publications. There are loads of these books out there for those of us who relish a little mental exercise. Those who study such books may notice that some of the terms used to quantify technological concepts are different, as are the forms of common equations are different. No problem.

This review will give you the opportunity to comfortably understand the written technology published during the early days of radio. All we have to do is write up a little "cheat sheet" to translate the old technical terms into modern terms.

Some of the obsolete units of measure need no explanation. Possibly because many of us have witnessed the renaming of that unit of measure, are familiar with term used in British electronics and radio publications, and/or are somewhat familiar with the general evolution of radio communications.

For example:

**Wireless** to mean radio, and **valve** to mean vacuum tube. Our British cousins have never abandoned the use of these two terms. But they had disappeared from US published technical literature by end of 1920s.

**Cycles per second**, abbreviated cps (or CPS), and **kilocycles** to mean 1000s of cycles per second, abbreviated kc (or KC). Many of us witnessed the post-WWII change from "cycles per second" to Hertz.

**Wavelength** in lieu of frequency. The water starts to muddy here. Many of the pre-and post-WWI radio (or wireless) books seem to relish giving the reader pages ad nauseam of tabulations converting wavelength to frequency and LC product (ref. 3, 4, and 5). Additionally, we notice that a few of the equations do not appear

to be correct. What's happening here?

The answer is simple, the unit of inductance, and sometimes also the unit of capacitance were often *not* the present Henry and Farad. In addition, the equations used wavelength in lieu of frequency. The use of wavelength in effect "flips the equation over," or more correctly, gives the reciprocal of the equation. Included in the early equations, of course, were the constant(s) needed to account for the unit(s) of measure being used.

A few examples:

First the reciprocal wavelength-frequency relationship. We are all familiar with the relationship:

$$\text{frequency times wavelength} = 300,000,000$$

or

$$f \lambda = 300,000,000$$

with frequency in Hz and wavelength in meters. The number 300,000,000 stands for the approximate speed of light in a vacuum in units of meters/second.

$$\text{If } f = 300,000,000/\lambda$$

then the reciprocal equation is

$$\lambda = 300,000,000/f$$

Today some of us may hesitate when we hear someone say "I'm going to QSY to a higher band?" Oh, is that the same as going from "40 meters to 20 meters," or is it going from "40 meters to 80 meters?" I still find this confusing! Maybe it depends on the transceiver's front panel engraving?

A little more complicated are variations on the familiar formula for calculating the simple resonant circuit relationship between inductance in henries and capacitance in farads to obtain the resonant frequency in Hertz:

$$f = 1/2\pi(LC)^{1/2}$$

A form seen in some of the older publications is:

$$\lambda = (2.09440)(10^{-8})(LC)^{1/2}$$

where  $(2.09440)(10^{-8})$  comes from  $2\pi/300,000,000$

The above equation relates the circuit's resonant wavelength to its inductance and capacitance. Inductance and capacitance units are the familiar henries and farads. Notice the  $(LC)^{1/2}$  is in the top of the equation, not in the bottom.

The water muddies even further. Frequently the pre- and post-WWI era authors did not mea-



sure inductance in henries and capacitance in farads. The popular unit of inductance was the “centimeter,” abbreviated in some texts as cm, in others as cms. On occasion the centimeter was also used as a unit of capacitance. In England, a popular unit of capacitance was the “jar.” The basic relationships are:

- one centimeter of inductance =  $10^{-9}$  henries = 0.001 microhenries (mics)
- 1 mic = one microhenry = 1000 centimeters of inductance
- one centimeter of capacitance = 0.001 jar of capacitance
- one cm of capacitance = (1/900) nanofarads = (10/9) micro-microfarad (picofarad)
- one jar of capacitance = (1/900) microfarad = 1000 cm of capacitance

You can imagine what these older units do to our “modern simple equation” relating resonant frequency to the square root of LC! A few of the older popular equations relating the LC product to the circuit’s (approximate) resonant wavelength in meters, or frequency in Hertz are:

$$\lambda = 59.6(LC)^{1/2}$$

where L is in centimeters, C is in microfarads (see ref 5, page 20)

$$f = 4.774 \times 10^6 / (LC)^{1/2}$$

where L is in mics and C is in jars

(see ref 9, section 298, chapter V)

It is obvious a reader must first digest the author’s units of measure for L and C before using any of the publication’s equations or tabulations involving L and C. Are these units valid? Yes, they are all rigorously derived from universal units of measure. You will also notice, as you read these old sources, that some currently-used units of measure have been with us since the earliest days of radio: i.e., ohm, volt, ampere, and watt.

One last obsolete unit of measure, is the “quality” descriptor, *decrement*. Decrement is very nearly the inverse of the present quality descriptor, Q. Why have we been interested in a quality descriptor such as decrement and, since the mid to late 20s, Q? During the evolution of the early electrical equations, the academicians saw certain repeated “subsets” of R, L, C, and frequency f within their equations. Some of these subsets nicely describe a circuit’s behavior such as its losses, or how fast the circuit response changes as frequency is varied, e.g., the sharpness of tuning.

For damped wave oscillations, as produced by spark transmitters (ref. 8), decrement describes how fast the spark oscillations will die out. In a formula representation, decrement, commonly denoted by the lower case Greek letter  $\delta$  (delta), is given by:

$$\delta = \log_e(A_1/A_2)$$

Where  $A_2$  is the peak amplitude of the decaying sinusoid wave cycle immediately after its predecessor cycle’s peak amplitude,  $A_1$  (see Fig. 1). Notice that:

$$A_2/A_1 = A_3/A_2 = A_4/A_3 = \dots A_{n+1}/A_n$$

Also notice the natural logarithm, base e is used instead of the logarithm base 10. (Do we all remember log base 10 that was taught to us before we finished Junior High School? Of course we do!)

Another definition of decrement, but pertaining to inductors is:

$$\delta = \text{energy dissipated per cycle/energy stored} \\ = R/2fL$$

Where f is frequency in hertz, R is the total radio frequency equivalent loss resistance of the inductor, and L is the inductance in Henries. (Energy? Yes, but remember, the missing  $i^2$  was canceled out from the top and bottom of the equation?)

We can now see that the modern quality term Q is related to decrement as follows:

$$Q = \pi/\delta$$

Within the historical literature, we find decrement written into the early radio laws, and also into post WWI amateur radio regulations as late as 1925. For years, the maximum permitted decrement for a damped wave transmitter under routine operation was 0.2 (ref. 8 and 10). A decrement of 0.2 is equivalent to a Q of 15.8—or the ratio of adjacent peaks of the exponentially decaying wave  $A_{n+1}/A_n$  is 1.22. This is definitely not very selective considering the broadband nature of a spark discharge. Due to the inverse relationship between  $\delta$  and Q, the lower the decrement, the higher the Q, or the lower the decrement, the sharper the tuning. The academically inclined reader may wish to consult references 7 and 9 for an exhaustive discussion of decrement.

Hopefully you can now pick up a pre-1930 (continued on page 57)

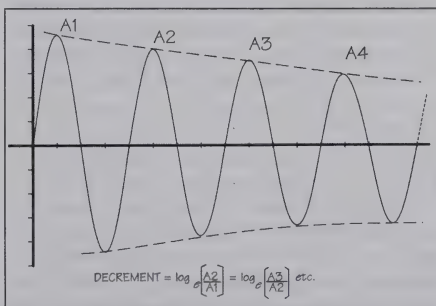


Fig. 1. Decrement of a decaying sinusoidal wave.

# THE VACUUM TUBE

EDITED BY LUDWELL A. SIBLEY, 102 MCDONOUGH RD., GOLD HILL, OR 97525-9626

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## Tube History in *The AWA Review*

*Lud Sibley, Editor of "The Vacuum Tube," and Lud's wife, were involved in a serious automobile accident while driving from Oregon to attend the AWA Rochester conference. My last information is that the Sibleys have been moved from hospital to rehab facilities and are recuperating from their injuries. The column before you now was an "extra," sent in by Lud some time ago to await a date when we would have space to run it. The OTB staff extends best wishes for a speedy recovery to the Sibleys and hopes that Lud will be back on our pages in the next issue.—mfe*

**T**he *AWA Review* has been around for 14 years now, enough to establish itself as a major source of electronics history written by a group of skilled authors. A wide variety of material directly related to tubes is found in the *Review*, plus a spectrum of "tube-rich" histories of early equipment. In Volumes 4-9, for example, over a third of the page count is tube-related material, befitting the core technology of the early electronic era. Many of the *Review* volumes listed here are still in print; the others turn up on the secondary market.

The following are histories explicitly of tube development and manufacture:

"Tube Manufacturing at Western Electric: the WE 300B" (Attila Balaton), Vol. 4, pp. 45-69. Gives the history of WE audio triodes; supplies a detailed photo tour of the 300B manufacturing process at then-AT&T Technologies (now Lucent Technologies) — much better coverage than the plant tours now found on the World Wide Web.

"A Sketch of Early Radio Vacuum-Tube Research and Development at the General Electric Company" (John Anderson), Vol. 4, pp. 6-31. Lays out GE's first attempts at developing tube technology and making tubes through WW I.

"Western Electric Tubes: Some Interesting and Historic Types" (Ludwell Sibley), Vol. 4, pp. 110-130. Gives the background of WE as the industry's biggest source of specialized tubes; covers tubes of importance in communications and radar.

"The Triode That Predated De Forest: Robert von Lieben and the LRS Relay" (Thomas Briggs), Vol. 5, pp. 45-62. Describes the mercury-vapor tube that made Berlin-Istanbul telephone service possible during WW I and served as a heterodyne oscillator in contemporary receivers; gives a biography of the inventor.

"Elements of Reference for Identifying and Dating Western Electric Electron Tubes" (Attila Balaton), Vol. 5, pp. 109-122. Lists date codes and other valuable background for collecting and using WE tubes.

"The U.S. Patents of Armstrong, Conrad, de Forest, Du Mont, Farnsworth, Fessenden, Fleming, Kent, Marconi, and Zworykin" (David Kraeuter), Vol. 5, pp. 143-191. This is an insightful look into the inventions of a group of inventors, five of whom (De Forest, Du Mont, Farnsworth, Fleming, Zworykin) were particularly involved in tube development... but many of their patents had nothing to do with tubes!

"Supplying Tubes, Sets, and People to RCA: The General Electric Connection" (John Anderson), Vol. 5, pp. 1-20. Gives the effects of the antitrust action that set RCA loose, ca. 1930, to manufacture its own products, as seen from the GE side.

"The Eaton Tube Collection" (George H. Clark, W. H. Eaton, L. C. F. Horle, Bruce Kelley, Lauren Peckham), Vol. 6, pp. 1-12; and "The Eaton Tube Collection Revisited" (Jerry Vanicek), Vol. 7, pp. 107-118. The first article provides a dual-page photo of this famous lost collection from WWI, associated Navy documents on tubes of the time, and an analysis of the 41 tubes. The second paper considerably refines the analysis of the tubes in the collection.

"The General Electric Company Considers Buying the De Forest Radio Telephone and Telegraph Co., 1916" (John Anderson), Vol. 6, pp. 13-18. Provides a detailed contemporary analysis of one of the ever-marginal De Forest companies.

"Radio Tube Manufacture in Australia" (Fin Stewart), Vol. 6, pp. 125-131. Provides an illustrated history of the Australian tube industry and its products.



"Memories of Early Electron-Tube Development" (Edward Herold), Vol. 7, pp. 15-28. Covers receiving tube development and related inventions at RCA in the productive '30s; written by a contemporary tube developer who later became a vice president of RCA and later of Varian Associates.

"Secret Tubes for Radar: The Western Electric 700-Series" (Ludwell Sibley), with its "Appendix — Production of VT90 (710A) Tubes in Australia" (Colin MacKinnon), Vol. 7, pp. 47-65 and 66-68. Describes a line of devices that figured heavily in radar and communications in WWII — and long afterwards.

"Robert H. Goddard and the Goddard Oscillator" (M. D. Hall), Vol. 7, pp. 151-158. Covers an early gridless oscillator devised by a researcher who is far better known for rocket development; describes related gridless tubes (the Collins C-100A and C-100D, and the Heintz & Kaufman Gammatron series).

"Rare Tubes: How to Recognize Them, and Why They Are Rare" (G. F. J. Tyne; photos by Jerry Vanicek), Vol. 8, pp. 47-55. The transcript of a talk by this premier tube historian, heavily illustrated with examples of historic devices (LRS Relay, Marconi type D, "bootleg" and rare-model audions, and Round valves).

"Joseph T. Fetsch: Vacuum-Tube Engineer and Collector" (Jerry Vanicek), Vol. 8, pp. 109-116. Gives a biography of this early collector and photos of much of his collection, including some "seldom seen" tubes.

"The Real Story of the Magnetron" (Ed Lyon), Vol. 9, pp. 181-204. Supplies details on the early history of the cavity magnetron, particularly on a little known original version patented by in the mid-'30s by A. L. Samuel of Bell Labs.

"Fritz Lowenstein, The Forgotten Man of the Vacuum Tube" (Bro. Patrick Dowd), Vol. 9, pp. 205-223. Covers the technical biography of the inventor of, among other things, grid bias as applied to tubes.

"Defiance in the West: The Heintz & Kaufman Story" (Al Jones, Hank Olson), Vol. 10, pp. 188-221. Details the beginnings of this once-important tubemaker and its early struggle against RCA's patent empire. Provides unique photos of surviving gridless Gammatron tubes, both developmental and commercial.

In the area of equipment development closely related to tubes are the following:

"AC Supply for Radio Receivers — How the Lowell and Dunmore (Almost) Changed the Industry" (Alan Douglas), Vol. 3, pp. 61-78. Covers the beginnings of line-operated radio sets, including the UV-196 rectifier.

"Ricevitore Popolare Italiano (The Italian People's Receiver) 1934-1942" (Robert Lozier), Vol. 7, pp. 1-13. Details a line of radios that, surprisingly, made heavy use of tubes designed in the U. S.


"A Brief History of the Valve Audio Amplifier (Carlos Fazano), Vol. 7, pp. 91-106. Describes the origins of "high fidelity" amplifiers and covers the tubes that made them possible.

"The Evolution of Broadcasting from the Transmitter Viewpoint" (unknown GE author), Vol. 7, pp. 159-184. Describes a variety of early tube-based broadcast equipment.

"A Glimpse at Old-Time Transmitter Development" (Walter Nelson), Vol. 8, pp. 148-154). Shows the tribulations of transmitter developers in such areas as trying to "tame" a developmental linear amplifier using UV-862s.


"The International Contest for RADAR" (Ed Lyon), Vol. 9, pp. 97-180. The struggle to make a success of an early radar was quite often a matter of pushing tube technology a bit harder.

"The Beginnings of Vacuum Tube Radio at Western Electric" (Dirk Vermeulen), Vol. 11, pp. 104-150. Covers WE's pioneering development of tube electronics, including applications in transcontinental telephone service, carrier systems, the 1915 transatlantic demonstration, and the military radiophones of WW I.

"Manufacture of Broadcast Receivers by the Northern Electric Company in the 1920s" (Robert Murray), Vol. 13, pp. 7-38. Details mainly equipment, but includes four pages on NE receiving tubes. 

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
## ***BELOW 535, continued from page 55***

book that presents basic radio theory and better understand the obsolete terms and those "seems almost correct" equations. Don't hesitate to add an early radio communications "nerd" book to your collection. It's amazing what you can find in them. For example, prior to 1930 the non-entertainment electronic communications industry had already implemented LF Trans-Atlantic 4-channel multiplex "single side band" voice communications! 

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- 2a. Beranek, L., *Acoustics*, McGraw-Hill Book Co., NY, 1954 (An excellent technical

- source for the minutest of details on how speakers, earphones, and microphones work and interact with their enclosures)
- 2b. Shearer, Murphy, Richardson, *Introduction To System Dynamics*, Addison-Wesley, Reading, MA, 1971, Chart Of Ideal System Elements, inside rear cover.
  3. Henney, K., *Principles of Radio*, John Wiley and Sons, 1929, table inside the rear cover.
  4. Anderson, J., Mills, A., Lewis, E., *Henley's 222 Radio Circuit Designs*, The Norman W. Henley Publishing Co., NY, 1923, Table IV.
  5. Sleeper, M. B., *Design Data For Radio Transmitters and Receivers*, Norman W. Henley Publishing Co., NY, 1922 Edition, Tables 1 and 2.
  6. Hodgman, C., et. al., *Handbook of Physics and Chemistry*, 44th edition, The Chemical Rubber Publishing Co., Cleveland, OH, 1963, starting page 3280, the chapter on Units and Conversion Factors.
  7. Morecroft, J. H., *Principals Of Radio Communication*, John Wiley & Sons, Inc., first edition, 1921, page 580. A spark transmitter was considered a "damped wave" oscillator, vs. the Audion (vacuum tube oscillator), Alexanderson alternator, Goldschmidt alternator, or Poulsen Arc Transmitter, which were classified as "continuous wave" oscillators.
  8. Bucher, E., *Practical Wireless Telegraphy*, Wireless Press, NY, May 1918 edition, page 91.
  9. *Admiralty Handbook of Wireless Telegraphy*, Volume 1, H.M. Stationary Office, London, England, 1938, Chapter VII.
  10. "New Regulations For Transmitters," QST, March 1925, page 29, See section on spark transmitters, and note 1 where  $\delta$  was changed from 0.2 ( $Q=15.7$ ) to 0.1 ( $Q=31.4$ ).
  11. *The ARRL Handbook For Radio Amateurs*, ARRL, Newington, CT, 2000 edition, pages 24.1-24.4. 

## SILENT KEYS

*We record the passing of the following AWA members with deep regret.*

**ART ALBION** (8-1-01)

**CHARLES M. BRELSFORD**,  
K2WW (8-23-01)

**HENRY G. ENGSTROM** (6-9-01)

**JACOB W. GLEICH**

**TY A. KEARNEY**, W7WPF (2-6-01)

**CHARLES M. BRELSFORD**

Charles M. Brelsford, K2WW, was the second president of AWA, serving from 1972-1982. Licensed since 1923 (his first call was 8BMU), he served as a radio officer on the S.S. *Tionesta*—which operated on the Great Lakes—on college summer vacations. Later, he worked for Harvey Firestone, Sr., and spent two years as Assistant Manager of the Firestone rubber plantation in Liberia. His duties included operating the radio circuit between Liberia and Akron. Charles retired from the Eastman Kodak Company, where he was Business Manager of the Research Laboratories, after 32 years of service.

He was a past president of the Rochester Amateur Radio Association, and served as Radio Officer for Monroe County (NY). For



*Charles Brelsford behind the counter of the "1920s radio store" at the AWA Electronics Communication Museum in Bloomfield, NY.*

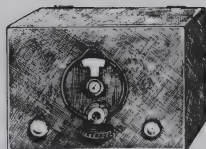
many years, he represented Rochester on the Eye Emergency Network. He moved to Arizona in 1987, where he became active in the Arizona Antique Radio Club. He is survived by his son, William M. Brelsford, K2DI, of Prescott, AZ, a stepson and stepdaughter, nine grandchildren and nine great-grandchildren.

*Note: AWA officers and members are requested to submit all information about Silent Keys, with or without special recognition, to Joyce Peckham, Secretary, Box E, Breesport, NY 14816. This will help in the collection, coordination and appropriate recognition of both AWA members and others who have made contributions to the electronics and entertainment industries.*



# AMATEUR RADIO

EDITED BY **JOHN F. ROLLINS, W1FPZ**, HC 33, BOX 150, ARROWSIC, MAINE 04530  
PLEASE INCLUDE SASE FOR REPLY.



## Upcoming Events

**A**nother successful AWA Conference has come and gone. Unfortunately, I was unable to attend for the second year in a row, but, once more, my friend, Tim Walker, W1GIG, filled in for me for the amateur session together with Randy Haus, KB2PLW. Reports were that the "Hour" had a good turnout and a lively discussions. Many thanks to all, and I hope to see you all next year.

To the newcomers especially, if you need help with parts that you can't find, write to me. I have most parts, or if I don't have them I know where most of the parts live. No cost to you except for shipping.

Rules and times for our winter events are listed below; they are the same as last year, except for date changes.

### ***Bruce Kelley Memorial 1929 QSO Party for December, 2001***

This year, the Bruce Kelley Memorial 1929 QSO Party is scheduled for the first and second week in December, that is December 1-2 and again December 8-9. We are hoping that these dates will avoid the QRM that we have been experiencing in the past. We shall see!

Log sheets and the information data sheet will be sent out about November 15th to all those who returned log sheets for the previous '29 Party. Others who desire log sheets may write to me. Finally, PLEASE send your logs in early. Most of you do, but a few are slow. I have a deadline to get the results to our Editor.

•**Dates and Times:** December 1-2 and December 8-9. Start Saturday at 2300Z (6:00 p.m. EST) and finish Sunday at 2300Z (6:00 p.m. EST), both periods.

•**Objective:** Contact as many other AWA members as possible. Exchange RST, name, QTH, type of transmitter, year and power.

•**Rules:** Transmitters must be 1929 or earlier self-oscillator designs such as the Hartley, TNT, PP tuned grid tuned plate, MOPA etc. Participants are encouraged, but not required to use

straight keys.

•**Power:** Transmitters are limited to a power input of 10 watts or less. However, between the hours of 500Z (12 p.m. EST) and 1300Z (8 a.m. EST), power may be increased to 20 watts to help make E-W contacts.

•**Frequencies:** Operate between 3550 KC and 3580 KC.

•**Logs:** Send all logs to John F. Rollins, 21 Bald Head Rd., Arrowsic, Maine 04530.

### ***Linc Cundall Memorial Old-Time CW Contest For January 2000***

The annual Old Time CW contest will be held during the last week in January. Note the change in the rules to include OT equipment to 1946 or earlier. This has been done to let collectors get credit for using WW II military equipment. Also note the change in the 80M band segment to 3550-3580 kHz.

Log sheets and information sheets will be sent out about January 15th to all those members who submitted log sheets in last year's contest. Anyone else desiring a log sheet may write to me.

•**Dates and Times:** Start at 6 p.m. EST (2300Z) on Wednesday, January 23 and end at 6 p.m. EST (2300Z) on Thursday, January 24. Repeat on January 26 and 27.

•**Objective:** Contact the greatest number of AWA members. When calling, use (for example) "AWA AWA de W2AN." On contact, exchange signal report, name, QTH, year of equipment, such as "TX 36" for a 1936 transmitter and "RX 34" for a 1934 receiver. Send "Mod" for modern (after 1946).

•**Rules:** A station will be scored only once on each band. Non-member contacts, and stations not submitting logs, will not count.

•**Frequencies:** 1800-1820, 3550-3580, 7030-7050, and 14060-14070 kHz  $\pm$  QRM. Concentrate 20 and 160 meter contacts on the hour.

•**Scoring:** QSO Zones: "E" eastern zone US Districts 1,2,3,4,8,9 plus VE1 VE2, & VE3; "W"

*(continued on page 62)*

**AUTHOR'S ADDRESS: P.O. BOX 665, TRUMANSBURG, NY 14886**

# RECENT RADIO, TV AND ENTERTAINER OBITUARIES

COMPILED BY **CHARLES S. GRIFFEN W1G9R**

1225 NEW BRITAIN AVE., WEST HARTFORD, CT 06110-2405



*Note: When known, the date of death is indicated in parenthesis.*

**LARRY ADLER, 87, (8-7-01)** harmonica virtuoso. Adler's artistic talent brought dignity to the harmonica and helped elevate it to concert hall status. During his seven-decade career he worked with everyone from George Gershwin to Kate Bush, *Sting*, Vaughan Williams and, most recently, the Welsh pop group *Catatonia*. Adler, who taught himself to play the harmonica, left home for New York City in 1928. There he performed in movie theaters between features. Soon he was appearing in vaudeville in the *Lew Leslie Revue*, and on Broadway, where he worked on stage with Eddie Cantor and accompanied Fred Astaire in Ziegfeld's *Smiles*. In 1934 he made his film debut in *Many Happy Returns*, which was followed by others including *The Big Broadcast of 1937*, *Sidewalks of London* (1940) *The Birds and the Bees* (1947) and *Genevieve* (1953).

**CHESTER B. "CHET" ATKINS, 77, W4CGP (ex-WA4CZD) (6-30-01)** country music guitarist. Known as "Mister Guitar," Atkins enjoyed a career as a recording artist and a session musician for such stars as Elvis Presley and the Everly Brothers. He was also a Nashville talent scout. Among his discoveries were Charley Pride and Waylon Jennings. From 1947, when he joined RCA Records, through to the 1990s Atkins recorded more than 100 albums earning 14 Grammy Awards. He made regular television appearances on ABC's *Grand Ole Opry* (1955-1956) and was a guest on almost every major TV show of his time. He was also a frequent guest on the PBS program *A Prairie Home Companion*. Atkins was presented with a Lifetime Achievement Award by the National Academy of Recording Arts and Sciences in 1993.

**ERIK BARNOUW, 93, (6-19-01)** media historian. Barnouw was considered the dean of media historians for his definitive three-volume *A History of Broadcasting in the United States* published from 1966 to 1970. Some of his other works include *Tube of Plenty: The Evolution of American Television* (1982) *The Sponsor: Notes on a Modern Potentate* (1978), *The Magician and the Cinema* (1981) and *Media Marathon: A Twentieth-Century Memoir* (1996). Barnouw

wrote early radio and television dramas and made a documentary about the bombing of Hiroshima and Nagasaki. He also founded the Film, Radio and Television Department at Columbia University and chaired the Broadcasting and Motion Picture Division of the Library of Congress.

**HEYWOOD HALE "WOODY" BROWN, 83, (9-5-01)** sportscaster. Brown was a CBS television commentator and sports correspondent for 19 years. He became a baseball writer after returning from service in WWII. Brown was also a character actor and performed in 14 Broadway plays and some films, including *It Should Happen to You* (1954) and *For Pete's Sake* (1977). He was the son of columnist Heywood Brown.

**IMOGENE COCA, 92, (6-2-01)** comedienne-actress. Coca is probably best remembered for her television appearances with Sid Caesar on NBC's *Your Show of Shows* (1950-1954). She achieved TV stardom in 1949 when she appeared with Caesar on *The Admiral Broadway Revue* (NBC & Dumont). Some of Coca's other TV appearances include *The Imogene Coca Show* (NBC 1954-1955), *Grindl* (NBC 1963-1964), *It's About Time* (CBS 1966-1967) and *Love, American Style* (ABC). She received five Emmy Award nominations and was awarded one for best actress in 1951. Coca began her career as a teenage vaudeville singer and later appeared as a chorus girl in *When You Smile* (1925). Some of her stage credits include *Garrick Gaieties* (1930), *New Faces of 1936*, *Who's Who* (1938), *Concert Varieties* (1945) and concluded with *On the Twentieth Century* (1978). Her film work includes *Promises, Promises* (1963), *Under the Yum-Yum Tree* (1963) and *National Lampoon's Vacation* (1983).

**ARLENE FRANCIS, 93, (5-31-01)** actress. Francis was a panelist for 25 years on television's longest-running game show *What's My Line?* (CBS from 1950 to 1967 and in syndication from 1968 until 1975). Francis made frequent appearances on TV during the 1950s including being the first woman to host a network news magazine as Editor in Chief of NBC's *Home* (1954-1957) and the first woman to host a game show, *Blind Date* (ABC 1949-1951, NBC



1952). During the 1930s and 1940s she was heard frequently on radio soap operas (at one point five a day), dramas and game shows. Francis also had a daily interview program, *The Arlene Francis Show*, on WOR(AM) in New York City from 1960 to 1984. Her film credits include *All My Sons* (1948), *One, Two, Three* (1961) and *The Thrill of It All* (1963). Some of Francis' Broadway appearances include *All That Glitters* (1938), *The Overtons* (1945) and *The Little Blue Light* (1951).

CHRISTOPHER HEWETT, 80, (8-3-01) actor. The British-born actor is perhaps best remembered for his role as the butler (Lynn Belvedere) on *Mr. Belvedere* which was seen on ABC Television from 1985 to 1988. Other television credits include *Ivan the Terrible* (CBS 1976) and *Fantasy Island* (ABC 1983-1984). During WWII Hewett, then 16, joined the Royal Air Force. When he was discharged he joined the Oxford Repertory Company where he appeared in more than 100 plays. His film credits include *Pool of London* (1951), *The Lavender Hill Mob* (1951) and *The Producers* (1968). Hewett made his Broadway debut in 1956 in the original production of *My Fair Lady*.

JOHN LEE HOOKER, 83, (6-21-01) guitarist and blues singer. Hooker's influence over blues and rock musicians spanned decades, from the Rolling Stones and the Animals in the 1960s to George Thorogood and the Destroyers in the '70s to Los Lobos in the 1980s. He recorded more than 100 albums over the last six decades and won a Grammy Award in 1990 for a version of *I'm in the Mood* which sold 1.5 million copies. A year later he was inducted into the Rock and Roll Hall of Fame. Hooker began his career as a guitarist accompanying gospel groups in the South and Midwest.

DR. FRANCES R. HORWICH, 93, (7-25-01) children's television educator. Horwich was the host of the pioneering children's program *Ding Dong School*, which began in Chicago on WNBQ in 1952. Within six weeks the half hour program was so popular that it was picked up by NBC and expanded to include 36 cities with an audience of three million preschoolers. The program moved to WNET(TV) in New York City in 1959. Prior to *Ding Dong School* she worked in the field of education for twenty years.

HUGH JAMES, 85, (6-17-01) announcer. James was the spokesman for the Firestone Tire and Rubber Company and Sun Oil for more than 20 years. Some of his announcing credits include *The Voice of Firestone* (NBC), newscaster Lowell Thomas (NBC and CBS), *Star for a Night* (Blue Network 1943-1944) *Call the Police*

(NBC 1948-1949), *The Parker Family*, *The Second Mrs. Burton* (CBS), *True Detective Mysteries* (CBS), *Wendy Warren and the News* (CBS 1947-1958), and *When a Girl Marries*. James was also Glenn Miller's broadcast announcer. He joined NBC in 1932 as a page and later moved to the announcing staff.

JACK LEMMON, 76, (6-27-01) actor. During a career that spanned fifty years, Lemmon performed in television, film, and stage productions that ranged from drama to comedy. He appeared in more than 50 films winning Oscars for his performances in *Mister Roberts* (1955) and *Save the Tiger* (1973). Highlights of his other film credits include *The Apartment* (1960), *Days of Wine and Roses* (1962), *The Odd Couple* (1968), *Missing* (1982) and *Grumpy Old Men* (1993). Lemmon made many appearances (by his estimate 400) on such early television dramatic series as *Alcoa Presents*, *Campbell Soundstage*, *Goodyear TV Playhouse* and *Kraft Television Playhouse*. Some of his most recent TV roles were in *The Murder of Mary Phagen* (1988), *12 Angry Men* (1998) and *Inherit the Wind* (1999). Lemmon made his Broadway debut in *Room Service* (1953) and continued to do stage work to enhance his skills. He got his first break on the radio soap opera *The Brighter Day* in the 1940s.

CARROLL O'CONNOR, 76, (6-21-01) actor. O'Connor will be remembered for his portrayal of the lovable bigot, Archie Bunker, on the CBS television comedy series *All in the Family* (1971-1979) and the spinoff series *Archie Bunker's Place* (1979-1983). The show, ranked number one for five years, was viewed by 50 million Americans. The Archie role not only made O'Connor a star, but rewarded him with four Emmy Awards. He also starred in the TV drama series *In the Heat of the Night* (NBC 1988) and appeared on more than 100 programs such as *The United States Steel Hour*, *Kraft Theatre* and *Armstrong Circle Theatre*. He began his career performing in stage productions here and abroad before landing a role off Broadway in *Ulysses in Night Town* in 1958. This was followed by a part in *The Big Knife* and later work in serious TV productions. O'Connor made 30 films starting with *Fever in the Blood* (1961), *Lad a Dog* (1961), *Lonely Are the Brave* (1962), *Cleopatra* (1963) and *Return to Me* (2000).

JOHN PAUL POUCH, 85, (5-27-01) television sports director. Polich, a champion hockey player of the 1930s and 1940s, began his television career with KTLA (originally experimental station W6XYZ) in 1947. That year he pioneered the first telecast of the Rose Parade using two

cameras located at the beginning and ending of the parade route. The broadcast was viewed on some 300 TV sets that were in Los Angeles at the time. Polich went on to direct broadcasting of boxing, wrestling, baseball, UCLA and Laker basketball and other sporting events. He retired from KTLA(TV) as Sports Director in 1980.

ANTHONY QUINN, 86, (6-3-01) actor. Quinn starred in over 100 films, often in ethnic roles, during a career that lasted more than 50 years. He earned Oscars as best supporting actor in *Viva Zapata!* (1952) and *Lust for Life* (1956). A sampling of his other film credits include *The Plainsman* (1936), *La Strada* (1954), *The Guns of Navarone* (1961), *Lawrence of Arabia* (1962), *Zorba the Greek* (1964), *Treasure Island* (1986) and *Ringside* (1999). Quinn's stage appearances include *A Streetcar Named Desire*, *Born Yesterday*, *Tchin Tchin* and *The Visit*. On Television, Quinn played the role of Mayor Alcalá on ABC's *Man and the City* (1971-1972) and made guest appearances on CBS' *Danger*, ABC's *The Dick Cavett Show* and NBC's *Philco TV Playhouse*. Before breaking into films, he held menial jobs, painted and was a prizefighter.

JOHNATHON C. RICE, 85, (7-22-01) public television executive. Rice and James Day co-founded KQED(TV) in San Francisco in 1954, using Rice's own station wagon as the station's office. It was one of the first public television stations to go on the air in the United States. Rice helped develop public-broadcasting news programming (Newsroom) and on-screen auctions of

donated merchandise as well as on-the-air solicitations of pledges from viewers. Earlier he was the News Chief of KTLA(TV) in Los Angeles.

DAME DOROTHY TUTIN, 71, (8-6-01) actress. Tutin was one of the most versatile and admired of British actresses. During her career she played almost all of Shakespeare leading female roles, from Ophelia and Juliet to Portia and Lady Macbeth. Tutin also did a full range of plays by Chekhov, Ibsen and Strindberg. She made her debut in *The Thistle and the Rose* in 1949 and later joined the Bristol Old Vic Theatre. This, in turn, led to her first movie role in 1952 opposite Michael Redgrave in *The Importance of Being Earnest*. Although Tutin later appeared in Laurence Olivier's film of *The Beggars Opera* and *The Shooting Party* with James Mason and John Gielgud, most of her acting was in the theater. In 1963 Tutin appeared on Broadway in the Shakespeare anthology *The Hollow Crown* and five years later returned to play Queen Victoria in *Portrait of a Queen*. She received many awards and last year was made a dame.

Information for this column was obtained from *Broadcasting and Cable*, *The Complete Directory to Prime Time Network TV Shows 1946-Present* (4th ed.), *The Hartford Courant*, *American Musical Theatre*, *On the Air: The Encyclopedia of Old-Time Radio*, *The New York Times*, *QST* and *Variety*. Thanks to Frank Q. Newton, Jr., W6SYG and Dr. A. David Wunsch for additional source material. ☐

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## AMATEUR RADIO, continued from page 59

western zone, U.S. Districts 5,6,7,0 plus VE4, VE5, VE6 and VE7. "DX" zone: All others.

•*QSO Points per Contact by Zone*: "E" to "E" or "W" to "W" 1 point; "E" to "W" or "W" to "E" 2 points; "E", "W" or "DX" to "DX" 3 points.

•*Equipment Multipliers*: MOD TX and RX=1; OT TX or RX=2; OT TX and RX 3.

•*Power Multipliers*: input to final up to 4.9 watts=4; 5-24.9 watts=3; 25-100 watts=2; 100+ watts=1.

•*Determining Total Points per QSO*: (1) Find QSO Points for contact. (2) QSO Points  $\times$  your equipment multiplier  $\times$  your power multiplier = total points for the contact.

•*Scoring Examples*: **Example 1**, KB2PLW

contacts W1FPZ; (a) both are in "E" zone for one QSO point; (b) both have OT TX and RX for a 3 multiplier; (c) both are operating at 10 watts for a 3 multiplier. Therefore the contact is worth  $1 \text{ pt} \times 3 \times 3 = 9$  points for each operator.

**Example 2**, W6TDP contacts W2ER; (a) "W" to "E" contact counts as 2 QSO points; (b) W6TDP has OT RX and OT TX running 20 watts; (c) W2ER has MOD RX and OT TX running 50 watts. Therefore the contact is worth  $2 \times 3 \times 3 = 18$  points for W6TDP and  $2 \times 2 \times 2 = 8$  points for W2ER.

•*Logs*: Send all January OT Contest log results to John F. Rollins, W1FPZ, 21 Bald Head Rd., Arrowsic, Maine 04530. ☐



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## AWA Review Volume 14

For 2001, the Antique Wireless Association is proud to present Volume 14 of *The AWA Review*.

It contains five articles with over 200 photographs documenting the history of early wireless and radio. The articles have been prepared and researched by noted scholars of the history of communications. Volume 14 also contains the first cumulative table of contents covering all previous volumes of the *Review*.

The first article, on the role of spark keys in the history of wireless telegraphy, has been prepared by historians Russ Kleinman, James Kreuzer, Karen Blisard, and Felicia Kreuzer, who visited the AWA museum with a professional photographer to document items in the museum's collection. They also traveled to Washington to locate and obtain photographs of important historical items buried in the archives

of the Smithsonian Institution. Their research has revealed a vast amount of information about early wireless companies and their products.

The second article is a summary of a project being conducted by Russ Kleinman and Karen Blisard in which they are attempting to chronicle and list all known manufacturers of spark keys. This is an ongoing project and it is updated frequently on the internet.

The third article, on the history of the Canadian Marconi Company, was written by historians Robert Murray and Roger Hart. Roger was the manager of marketing services for Canadian Marconi for many

years, during which he worked on documenting the history of the company. Using Roger's access to the records and archives of the company, the authors have put together a tremendous amount of information and some wonderful pic-

*(continued on page 64)*



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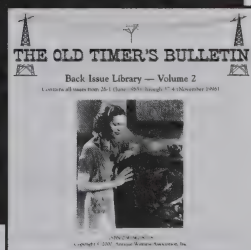
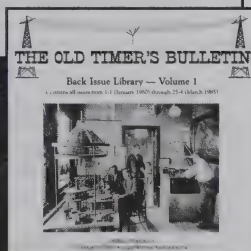
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## MUSEUM STORE, continued from page 63

tures—filling in the gaps in our knowledge of the evolution of this company.

The fourth article, which focuses on the work of De Forest and Johnson at the American Wireless Telegraph Company, was written by historian Glenn Trischan. Glenn has worked for Johnson Controls for many years and has had access to a vast storehouse of information from their archives. He has organized it into a time-flow picture of the history of the company and the individuals who played such an important role in its past.

The fifth article, written by art historian Barbara Havranek, is a bit unusual. She has combined her love of radios with her knowledge and expertise in industrial design to tell us of the artistic and technical origins of some of the Bakelite radio cabinet designs.

The cumulative table of contents allows you to see the title of every article in every volume of the *AWA Review* since it began publication in 1986. This will allow historians and collectors to search for relevant articles in the back issues.

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Make checks out to "AWA Museum" and send to Ed Gable, Curator, AWA Museum, 187 Light-house Rd., Hilton, NY 14668.



## CLASSIFIED, continued from page 68

### WANTED—MILITARY

M-209 Cipher machine. Also 1942 thru 1945 Popular Science Magazines, complete years preferred but singles OK No cutouts. Barry Keyes, P.O. Box 171, New Creek, WV 26743

### WANTED—PARTS

Want for Wards Airline movie dial radio an equivalent lamp to Ward's part no. 62-5517. This is a 6 volt, axial filament lamp with a small, single contact bayonet cap, the same as used for car side lights. Also known as BA15S. This lamp is the same type as used as an ex-

citer lamp in film projectors. R G. Paton, 56 Glengarry Road, Glen Eden, Auckland 1007 New Zealand

### WANTED—BC/SW TUBE RADIOS

WTR\*Knight Kit Ocean Hopper plug-in coil regenerative SW receiver. Detachable AC line cord for 50s Motorola tube-type portable radios with small non-polarized pins. Jack Schanker, W2STM, 65 Crandon Way, Rochester, NY 14618 (716) 442-3909 E-mail: j.schanker@ieee.org

Ozarka Model 93 or any other Ozarka that uses the same cathedral-like cabinet. Cabinet photo available by E-mail. Wes Cobb, 943 Avenida Majorca Apt. C, Laguna Woods, CA 92653 (949) 581-9350 E-mail: yelsew@fea.net



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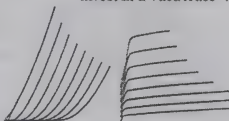
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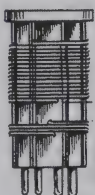
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Old-time ads are free to members collecting and restoring equipment for personal use. Please observe the following: (1) one ad per issue per member; (2) include as SASE if acknowledgement is desired; (3) material must be more than 25 years old and related to electronic communications; (4) give your full name, address and zip code; (5) repeats require another notice (we are not organized to repeat automatically); (6) the AWA is not responsible for any transaction; (7) we retain the right to reduce an

ad's size if over seven lines; (8) AWA does not accept commercial advertising in this column; and (9) closing date is six weeks prior to first day of month of issue. Ads received after that time will be held for the following issue. Mail all ads to: **RICHARD RANSLEY, P.O. BOX 41, SODUS, NY 14551.**

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OTB classified ads are now available for browsing in the "OTB On Line Edition" on our internet web site ([www.antiquewireless.org](http://www.antiquewireless.org)). This practice will give members dramatically increased exposure for their ads.

### SELL/TRADE—GENERAL

Free—Bell Sound Systems, Columbus, Ohio, Model RC-47 Record-O-Fone disc recorder. In poor condition, was stored in a basement. Anyone want to attempt restoring this old relic? Free pickup or pay shipping. Wayne Sandford, 59 S. Wood Ridge Dr., Warrenton, PA 18976-1027 E-mail: [W5WS@aol.com](mailto:W5WS@aol.com)

Two Jensen Corner horns for 12 or 15 inch woofers. Used but in excellent condition. \$75. each. Write for further information. Charles Graham, 4 Fieldwood Drive, Bedford Hills, NY 10507 (914) 666-4523

Scencore LC53 "Z meter" in excellent condition, with original manual, \$200. + shipping; Volt-ohm meters (5) with cases, some working, some need (odd) batteries (untested), some with original manuals; Triplett 631, Simpson 221 & 265, Bell, Amprobe, \$50 For all + shipping Harry Goldman, 3 Amy Lane, Queensbury, NY 12804

Six NOS RCA UX base 874 tubes (90 volt regulator), \$30. for all; Silvertone 52 (ballast) tube, same size/shape as a UX199, \$10.; good power transformer from an orphaned German cathedral set, 110-240 volt primary, HV plus 4 volt secondaries, \$25. ppd. in lower 48. Jim Farago, 4017 42nd Ave. So., Minneapolis, MN 55406-3528 (612) 722-0708

125 tube type table radios (kitchen and bedroom) from 1945-1970 era; parts to build 20 transmitters—transformers, coils, switches, fans, blowers, sockets, diodes, capacitors, meters, loads, counters, chassis, panels and cabinets. Also have a TV-Radio Service Shop with 20 instruments and 90 drawers of parts. Digital photos available via E-mail. Francis Yonker, W2IBH, 1229 Inverary Place, State College, PA 16801 E-mail: [yonker1229@home.com](mailto:yonker1229@home.com)

Have Editors & Engineers Radio Handbooks, also other radio engineering books; Channel Master six-transistor radio Model 6510 with schematic in excellent condition. Is at least 40 years old; 125B socket with tube, dated Dec. 23, 1919; also WE tube CW-1344; rare RCA tube UX859. Barney Moffatt, W5CJZ, 5714 Trail Meadow Drive, Dallas, TX 75230 (214) 363-3406

500-C Fisher AM/FM stereo, chassis only, with tubes, no knobs. It's heavy. Make offer. Alton



DuBois, Jr., 67 Peggy Ann road, Queensbury, NY 12804

Selling rare 1926 "Edwards" battery radio. Only two now known to exist. Made in Sag Harbor, Long Island. Six tubes, all 01A's. This one special because of front panel mistake, mfr turned it over and used other side! Works FB, wooden cabinet. \$500. postpaid. Also selling MFJ VERSA-TUNER, model 989B, handles full legal power. Works FB. \$265. postpaid. Don Miller, W2MQB, P. O. Box 3005, The Springs, NY 11937-0395 (631) 324-2546 E-mail: BonacUSN@aol.com

Wide variety of radios, test gear, meters, parts and tubes, etc. to liquidate residue of 72 years of radio collecting and restoration. Send SASE to: Al Blanco, 204 Henrico Rd., Front Royal, VA 22630

Stromberg Carlson Model 1A: Philco 60 cathedral: NIB 6JS6 & 24G tubes. Need Philco 89 (SW model), 4 controls, chassis & speaker; 70 & 90 cathedral cabinets. Rollei 35 classic or SE, NIB 6U5/6G5 & 6E5 tubes. A. Bruno, 24 Butternut Dr., New City, NY 10956 (845) 354-8899

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#### SELL/TRADE—LITERATURE

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AWA Review Volume 13. \$14. postpaid. Ken Greenberg, 4858 Lee, Skokie, IL 60077 (847) 679-8641 between 1 and 5 P.M.

Trading off (piecemeal) my entire library of Popular Electronics, Radio-TV Experimenter, Electronic Experimenters Handbook, Radio Service Dealer, Radio Maintenance, Radio News, Radio-Craft, RCA Ham Tips, GE Ham News, Radio, Radio Handbooks (Jones/Orr), Radio Electronics, Electronics World, Electronics Illustrated, CQ, Ham Radio, 73, QST, all ARRL Handbooks and publications, catalogs (Allied, Lafayette, BA, Walter Ashe, WRL, etc. Want manuals such as EICO, B&K, Knight-Kit, Hickok, Hallcrafters, National, Hammarlund, Johnson, Drake, WRL, Heathkit, etc. A. J. Bernard, P.O. Box 690098, Orlando, FL 32869-0098 (407) 351-5536

Radio schematics & service data \$ 2.50 plus #10 SASE, U.S. receivers 1920s to 1970s, Australian receivers 1930s to 1960s. Price is for 1 to 5 pages of data per model, over 5 pages the copy charge is 20 cents per page. Questions/quotes answered by E-mail or SASE. Want radio club publications, newsletters & journals. Steve Rosenfeld, P.O. Box 418, Manahawkin, NJ 08050 (609) 978-0331 E-mail: srosenfeld@ems.att.com

Radio Callbooks, Radio Listener's Guide & Radio

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Floyd Paul, 1545 Raymond Ave., Glendale, CA 91201-1212 (818) 242-8961

Federal Tel. & Tel. 64 page booklet. Describes Federal Radios from the beginning in 1921 to the end in 1929. Over 60 Illustrations including pictures on early Federal R.F. and audio amplifiers as well as all of the earliest radios. Many Federal parts are pictured and described. Includes article and speech by Dick Schamberger, Federal expert. All Federal radio models are listed with the year and month introduced, cost new and description. Federal broadcast station WGR is described. Contains more Federal info than exists elsewhere. Good quality printing. Available for \$8.95 (includes S & H) from Larry Babcock, 8095 Centre Lane, East Amherst, NY 14051 E-mail: dotlarryb@aol.com

UR old QSL card?? Free search by call sign, will send you a find at \$3.50 ppd. Collection from the 1950s, 60s and 70s. I collect old QSL card collections. Chuck Barton, NZ5M, 8705 Toledo Avenue, Lubbock, TX 79424 (806) 698-8767 E-mail: CRBCS1@prodigy.net

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#### SELL/TRADE—MILITARY

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Will trade or sell WWII German receiver Torn Eb for other foreign WWII radio. Will consider too, a US TBX (early). Also have a Radio Receiver Model CFT 46245 (a radio compass receiver by Federal Telephone and Radio Corp.) It's a large receiver with a CRT indicator, approx. 30 in. high and 20 in. wide. Is in like new condition except for some years of dust. Best offer or will trade for WWII radio equipment. Charles Newcomer, 100 Central Manor Rd., Mountville, PA 17554

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#### SELL/TRADE— TRANSISTOR/CRYSTAL SETS

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Galena crystal radios and parts to make your own. Leonard Gardner, 458 Two Mile Creek Rd., Tonawanda, NY 14150-6610

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#### WANTED—COMMUNICATIONS GEAR

---

National NTE transmitter. I love National. Sylvia Thompson, N1VJ, 33Lawton Foster Rd., Hopkinton, RI 02833 (401) 377-4912 E-mail: N1VJ@arrl.net

Portable HF radio sets made by Spilsbury/Hepburn or Spilsbury/Tindall, especially a Model PRT-2 or PRT-20. Have classic communications gear and telegraph keys to trade, or cash. Rick Ferranti, WA6NCX, 1341

Cedar Street, San Carlos, CA 94070-4755 (650) 859-2857 E-mail: remler@juno.com

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#### WANTED—GENERAL

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Want to buy 1930s and 1940s television sets and television parts, especially 10BP4 and 10KP4 CRTs. Charles Harper, 2000 Jackstown Road, Paris, KY 40361 (859) 484-9393 E-mail: charper@kyk.net

Brush Model #BK-401 "Sound-Mirror" Magnetic Tape recorder 1947 vintage. Gaylord Ewing, 155 Main St., P. O. Box 144, Morris, NY 13808 E-mail: lewing@citlink.net

Supreme Tube Tester Model 500 Manual, circuits, advertising, or information.. Charles Kirsten, 15556 Sandra Lane, Sylmar, CA 91342 (818) 364-0491

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#### WANTED—INFORMATION

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Anything about a Supreme Model 582 "signal generator and frequency modulator." Based on the tube complement, it appears to be from the mid thirties (6C6, 6A7, 6F7, 6Z4). Gordon (Don) Bell, 133 Le Loup Road, Melrose, NY 12121-3014 (518) 663-9978 E-mail: WA2YQY@CompuServe.com

Want schematic and any other information for a Fer-

ris Model 25B Signal Generator. Roger C. Asman, 15353 Blue Skies Court West, Livonia, MI 48154-1515 (734) 464-0426 E-mail: rogerasman2@aol.com

Information on RME-69, need schematic & or manual copy; National Type BM dial, 5v-10A & 10v-10A filament transformers. Richard Bauer, 563 Hambrick Rd., Dallas, TX 75218-1746 E-mail: k5rb@worldnet.att.net

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#### WANTED—KEY & TELEGRAPH

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Unusual telegraph items such as left-handed or right angle bugs or verticals. Pre-1870 landline keys etc. and spark era days. Have a few traders. Gil Schlehman, K9WDY, 335 Indianapolis, Downers Grove, IL 60515 (630) 968-2320

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#### WANTED—LITERATURE

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GE Service Notes 1936 to 1938 (or 1939). Also Zenith Radio Service manual Vol. #4. Jim Berg, 4261 Wilcox Rd., Box A, Northport, WA 99157 (509) 732-4047 E-mail: jimfberg@webtv.net

WLI\*The AWA Review; Vol. 5, Vol. 9, Vol. 12. Henry Schultz, Jr., P.O.B. 3324, Erie, PA 16508 (814) 864-9960 E-mail: W13U@att.net

(continued on page 64)

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### MUSEUM, continued from page 72

the membership at the conference. First, there is *AWA Review* 14. This is some classy issue! All five of the papers presented are excellent, but the two articles on Spark Keys, crammed with sharp detailed photos, are destined to become the final word and authority on the subject. A copy should be in every collector's library. Also of great interest is the availability of long out-of-print *AWA Reviews* one through five on one CD. Those items, along with the new AWA lapel pin, are now available by mail from the museum store. See details elsewhere in this issue. We need to thank and recognize Tom Perera, W1TP, our new *AWA Review* editor, for making these offerings available for the benefit of all AWA members.

Now I need to take a moment of your time and talk about the new proposed museum organization you have been hearing about for the last two years. I'll try to be brief. We need to complete our application for a permanent New York State Charter for your museum. Chartering is important. It not only greatly adds prestige to the museum and opens the door to grants, but in doing so the museum and the collection come under the protection of the State (not control, but pro-

tection) so that in the event of some terrible unforeseen circumstance the collection, the items that you have or will donate, can never fall into the hands of individuals or organizations of unknown intent. That is very important to me and I assume you agree.

Chartering is not easy. I have spent two years of my life designing processes and writing formal procedures for your museum operations. That's done. The last hurdle, the only thing preventing us from being granted the Charter, is how the museum is organized on paper. The museum, for several years, has operated separately from the Club in that it has its own budget, bank accounts, tax accounts. It is run by a director, curator and museum trustees.

On paper, however, the museum is still run by the AWA Club via the Club by-laws. The state of New York doesn't allow this. You cannot have the museum, a chartered organization, run by the Club, a non-chartered organization. So the final and relatively easy move is to write a set of by-laws for the museum, elect the museum Board of Trustees, Director and other officers, and separate the two organizations solely for the



purpose of obtaining the charter.

We have hired (at no cost to the membership) the very best not-for-profit lawyer we could find and he fully endorses these actions as being correct and exactly following NY state laws. We have not done this in a vacuum. It is the right thing to do, we need to do it, and I ask for your support. Please review the Proxy provided with this issue of the *OTB*, vote as you think best, and

return the Proxy promptly. Thank you.

In signing off for now I hope you all have a nice fall and holiday season coming up. Remember our guys and gals in uniform now overseas in your prayers. God Bless America.

*Ed Gable*

Ed Gable  
K2MP/W2AN, Curator

## RECENT MUSEUM DONORS

(compiled September 20, 2001)

RAY JOBES WB2AFQ300

*Receiving tubes, modern*

JOHN ANDERSON

*Books; "The General, Sarnoff" more*

JIM BEYER

*W/E tube display, Klystron*

DAN BRESLAWSKI

*Drug store tube tester*

JOHN BRYANT W4UX  
(ESTATE)

*Original Touch Coder prototypes, bugs, sounder, SB-220, much more.*

HARVEY COHEN K2EJP

*Remler Variometer, novelty transistors*

ART DEBRUYCKER W2YGW

*W/E VT-2 (Navy CW931)*

PAUL ERTSGAARD W3IEE

*Unusual British energy slide rule*

PAUL FELDMAN

*Akai tape deck*

ED GABLE K2MP

*ICOM 230*

GEORGE GLANN

*15 table radios, Peerless speaker*

DALE GOODWIN

*Zenith service manuals*

ARMOND LAMBERT K1FLD

*Large TV magnifier*

GEORGE LEAGUE

*Large collection tubes, books, more.*

MIKE MARGOLIS WB2RAZ

*SCR-284 WWII field radio set*

TOM PETERSON, JR.

*Numerous MIL items*

FIN STEWART

*Cossor AT-50 TX tube, box*

MICHAEL TANNENBAUM

*Cash donation*

SCOTT THEIS

*Cash donation*

CHARLES WHITE

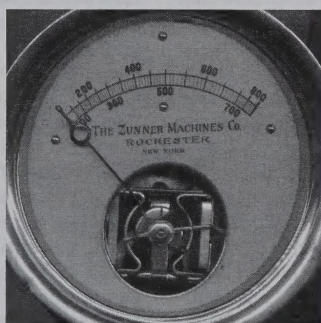
*Zenith 6S321*

## Poking Around in the Parts Room

By Alan Pellnat, KX2H, 10 Birmingham Dr., Rochester, NY 14618

The museum annex parts room maintains a supply of restoration parts for old radio equipment. This ranges from Crosley book type variable capacitors and circa 1920s AF and RF transformers to early transistors and integrated circuits. I have spent the better part of the past three years sifting, sorting and organizing the parts room stock. This stock is available to members engaged in restoration or reproduction projects for the asking as a benefit of membership.

"Made in Rochester" is a new museum exhibit which I assembled over this past winter and it con-



tinues to grow as we sift and sort. It records and displays the development of electronic manufacturing in the Rochester area from the turn of the 20th century to the present. So far we have developed brief histories of some 30 odd local companies and display products from about 20 of these.

As Ed Gable mentioned in his curator's notes in the August *OTB*, we continue to identify new items for the Made In Rochester display. A few weeks back I came across a panel meter with "The Zunner Machines Co., Rochester, New York" marked on its face.

"Aha," I said to myself, "another item for the Made In Rochester display and a new company name to research." The panel meter measures about six inches in diameter and with its black cast iron case weighs in at a little over six pounds. The movement is the typical d'Arsonval type, but is a bright shiny chrome plated affair with a zero adjust lever mechanism set into a slot in the bottom of the case. The full round face is circumscribed with a chrome plated bezel that is a bit dented and scratched. The scale is zero to eight hundred with no indication of the units of measurement and it is non-linear with compression at both ends; the greatest expansion being in the five hundred to seven hundred range. Two large binding posts at the bottom of the case are provided for connections.

A few days later I went to the Rochester Public Library to do the usual basic research on the origins and lines of business of the Zunner Machines. Co. In this case it was fairly simple and straightforward up to a point. Based on the appearance of the meter I estimated that it was probably made in the first twenty years of the last century. So I started with the 1910 city directory.

I didn't find The Zunner Machines Co. but I did find The Zunner Construction and Equipment Co. The president and treasurer of this company was given to be John H.G. Zunner a resident of Rochester. A classified advertisement under the heading of Contractors specified "Builders of Special Machinery and Cold Storage Houses. Sole owners and manufacturers of John H.G. Zunner's patents." "Doesn't strike me as a likely maker of unusual panel meters," I said to myself.

Bracketing to earlier and later directories revealed the brief history of Mr. Zunner's enterprises. Up until 1906, his occupation was given to be a brewer. Rochester was a beer brewing and drinking town then as now. His construction company saw the first light of a business day in 1907 and became The Zunner Machines Co. in 1911. He remained as President of the company up through its demise in 1917. Here now is the point where this yarn takes a turn.

In the 1913 directory under the listings for The Zunner Machines Co. and its president was a single line entry reading: "Irvin W. Zunner, Died Jan 7, 1913, age 21." From 1911 on Irvin W. Zunner had been listed as employed at the address of the Zunner Machines Co. and boarding at John H.G. Zunner's residence address. There is no mention of him before 1911 when he would have been just 19 years of age. "What a shame that died so young," I thought to myself, "I wonder what the circumstances were?"

Now from the city directories I had to get into

the newspaper archives. We are fortunate in Rochester in this regard in that there are almost a hundred and fifty years worth of local newspapers freely available to the public on microfilm with print capable readers. It didn't take me long to find my answer in the Rochester Union & Advertiser for January 8, 1913 in a single column item captioned "Rochester Man Killed in Wreck" over a picture of a handsome young Ervin W. Zunner.

Ervin W. Zunner died in a train wreck on the "Big Four" at Stockwell, IN. The news item refers to telegrams exchanged between an Indiana undertaker and the bereaved father regarding disposition of the "mangled beyond recognition" remains. It reports that Ervin W. was his parents' only child, had been an outstanding football player during his high school days and left school before graduation to join his father's business as a manufacturer of brewery machinery. He had worked as an enumerator in the 1910 census. He carried the title of Sales Manager and was on a "tour of inspection" on behalf of the company when the accident occurred.

Museum Volunteer Manny Pires tested the odd panel meter for me and determined that it read full scale on a current of 10 mils and the coil measured about 1.5 ohms resistance. I disassembled the meter at home and could find no other indications of the source of manufacture other than the Zunner Machines Co. printed on the meter face below that odd zero to eight hundred compressed-on-both-ends scale. My guess is that the meter probably was calibrated to read temperature as registered by a thermocouple. It may have been part of some of the elder Mr. Zunner's patented brewery machinery and as such really has no place in our collection.

When we browse through swap meets estate sales and flea markets looking for that rare piece of equipment to add to our collections we never give a thought to the people who made it or bought it new or the impact it may have had on their lives. Here was a brewer who moved his family to Rochester from Boston around 1905, worked at his trade, patented some inventions and set himself up in business to manufacture and sell his ideas. He had one son who left high school before graduation to join him in his flourishing enterprise only to lose him in a train wreck at the age of 21. It leaves me still wondering whether the business failed just a short four years later for lack of entrepreneurial energy or lack of Ervin W. Zunner.

I'll keep Mr. Zunner's meter as a reminder that our collections represent more than just cultural and scientific artifacts. They also represent the lives of people.



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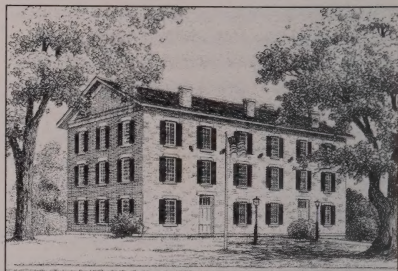
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**Amateur Station:** W2AN, W2ICE

**Curator:** Ed Gable



### Mailing Address:

Ed Gable, Curator, AWA Museum,  
187 Lighthouse Rd., Hilton, NY 14468  
e-mail: [k2mp@eznet.net](mailto:k2mp@eznet.net)

## MUSEUM NEWS

Hello and greetings from the curator and crew of your museum. It sure was a pleasure to meet and chat with so many of you at the just-completed AWA Annual Convention. It was a grand event starting, of course, with a larger-than-ever crowd visiting the Museum and Annex on Wednesday night.

Among the new displays viewed by those making the trip was a joint exhibit set up by your museum and The James Millen Society. Since it has been 100 years since the birth of James Millen, famous for designing the National HRO and the later founding of the James Millen Manufacturing Company, it was fitting to celebrate his accomplishments. Highlighting the event was an immensely successful on-the-air activity using both the James Millen kW AM rig at the Annex Jim's callsign, W1HRX. Coordinating all this was the JMS president Don Buska, N9OO. Annex visitors also saw the new shelving in the Communications room, an all new display of meters and electrical items in the Scientific room, and our new Scott console in the TV room.

I don't know why, but these things always fascinated me, and I had to have one. And I finally found one, still in use, at a store 20 miles away. What? A drug store tube tester! The store was being sold and the occupant retiring. When I picked it up, the owner said "I made a lot of money with that thing, it sure made a lot of good tubes test bad." Anyway, that historical item is now cleaned and shiny and on display ready for use.

Having just closed the Museum for the season, we are now already thinking of new displays for next year. The Conference theme for next year is "50 Years of AWA" and we will carry that over to the museum as well. Remember, this is your museum, so please let me know if there is anything that you would like to see added or emphasized. I am also very willing to join with other groups, like the JMS this year, to work on joint displays. So if there is a tube group, military group, key group, or whatever, that might want to set up a display at the museum for the conference or for the entire year, contact me and let's chat about it.

Some exciting items were introduced to

*(continued on page 68)*